

**Higher Education in Regional and City
Development**

Amsterdam, The Netherlands



Higher Education in Regional and City
Development

A m s t e r d a m T h e N e t h e r l a n d s

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Foreword

Universities and other higher education institutions can play a key role in human capital development and innovation systems in their cities and regions. Reviews of Higher Education in Regional and City Development are the OECD's tool to mobilise higher education for economic, social and cultural development of cities and regions. They analyse how the higher education system impacts local and regional development and assist in improving this impact. They examine higher education institution's contribution to human capital and skills development; technology transfer and business innovation; social, cultural and environmental development; and regional capacity building. The review process facilitates partnership building in regions by drawing together higher education institutions and public and private agencies to identify strategic goals and work together towards them. To know more about the OECD review process and requirements, visit Higher Education and Regions' website at www.oecd.org/edu/imhe/regionaldevelopment.

These reviews are part of a wider multi-year work of higher education in cities and regions coordinated by the OECD Programme on Institutional Management of Higher Education (IMHE). In 2004-07, the OECD/IMHE conducted an extensive study with 14 regional reviews across 12 countries. This resulted in the OECD flagship publication *Higher Education and Regions: Globally Competitive, Locally Engaged* (OECD, 2007) with recommendation to benefit both higher education institutions and national and regional governments. In 2008, the OECD/IMHE launched a second series of OECD reviews of Higher Education in Regional and City Development to address the demand by national, regional and local governments for more responsive and active higher education institutions. As a result, 14 regions in 8 OECD countries and 3 non-member economies underwent the OECD review process in 2008-10. The reviews were carried out by the OECD/IMHE in collaboration with international organisations and associations and other OECD programmes and directorates. This work also supports the OECD Innovation Strategy and OECD Green Growth Strategy.

This OECD review of Amsterdam is part of the second round of OECD reviews of Higher Education in Regional and City Development. A review was also carried out in Rotterdam.

Acknowledgements

Numerous local stakeholders and representatives of higher education institutions provided valuable insights during the review visit and in the form of comments. The OECD would like to thank in particular: the Regional Steering Committee, the Regional Coordinator, Peter Nijkamp, and the authors of the Self-Evaluation Report, as well as all those we met and who gave so generously of their time and experience.

This publication draws on interviews carried out during a week-long review visit in 8-13 November 2009, on the findings of the City of Rotterdam Self-Evaluation Report and using additional information provided to the review team. The OECD Review Team had a full and intensive programme and was received openly by a wide range of stakeholders. We had the benefit of a reflective Self Evaluation Report by Bert Tieben and Theo Smid¹ which went well beyond description to postulating a number of hypotheses about strengths and weaknesses which we were able to test. We cite this report, hereinafter referred to as the SER, frequently in the following pages, and are indebted to it and to its authors for many other unacknowledged insights. We were also able to rely on a range of other reports, notably the 2008 OECD thematic review of tertiary education report on the Netherlands.

This review is complemented by a similar review of Rotterdam and some elements of the analysis are common to both reports. The Netherlands is not the only country where more than one review is being conducted. The particularity of Amsterdam and Rotterdam however, is that they can be considered – and are considered – as both forming part of a wider region, the Randstad, which has itself been the subject of review by OECD².

This publication was co-ordinated by Richard Yelland (OECD Programme on Institutional Management in Higher Education). The other members of the Peer Review Team were Patrick Dubarle (former OECD), Lauritz Holm-Nielsen (University of Aarhus, Denmark); Kristopher Olds, University of Wisconsin, Madison, United States, and Véronique Timmerhuis (Social and Economic Council, the Netherlands).

Further details about the Review Team can be found in Annex I of this report. Rachel Linden supervised the publication process.

Notes

- 1 Tieben, B. and Smid, T. Review of higher education institutions in regional and city development: Self-evaluation report of Amsterdam, SEO Economisch Onderzoek, 2009.
- 2 OECD Territorial Review, Randstad, Netherlands, Paris 2007

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List of Acronyms

| | |
|---------------------|---|
| AMU | Academic Medical Centre |
| AWT | Advisory Council for Science and Technology |
| CPB | Netherlands Bureau for Economic Policy Analysis |
| GNI | Gross National Income |
| HAVO | The HAVO (<i>Hoger Algemeen Voortgezet Onderwijs</i> , "higher general continuing education") has five grades and is attended from age twelve to seventeen. A HAVO diploma provides access to the HBO sector of tertiary education. |
| HBO | <i>Hoger Beroeps Onderwijs</i> , higher professional education |
| HBO-Raad | HBO Council, the central body representing higher professional institutions |
| Hogescholen | Tertiary institutions providing higher professional education |
| HOOP | Higher Education and Research Plan (<i>Hoger Onderwijs en Onderzoek Plan</i>) |
| HvA | Hogeschool van Amsterdam |
| IMHE | OECD Programme on Institutional Management in Higher Education |
| KNAW | Netherlands Royal Academy of Sciences (<i>Koninklijke Nederlandse Akademie van Wetenschappen</i>) |
| MINEZ | Ministry of Economic Affairs |
| MBO | MBO (<i>Middelbaar Beroeps Onderwijs</i> , literally, "middle-level vocational education") is oriented towards vocational training. Many pupils with a VMBO-diploma attend MBO. MBO lasts three to four years. After MBO, pupils can enrol in HBO or enter the job market. |
| NWO | The Netherlands Organisation for Scientific Research |
| NVAO | Netherlands-Flanders Accreditation Organisation |
| OCW | Ministry of Education, Culture and Science |
| OECD | Organisation for Economic Cooperation and Development |
| PPP | Purchasing Power Parity |
| Picken in die Delta | Programme of support aimed at strengthening the Dutch economy by targeting resources onto pockets of economic excellence. |
| RAAK | The Regional Action and Attention for Knowledge programme which aims to strengthen the relationship between UAS, regional training centres and SMEs to transfer knowledge |

| | |
|-------------|---|
| SME | Small and medium enterprise – the small business sector |
| UAS | Universities of Applied Science (<i>Hogeschool</i>) |
| UvA | University of Amsterdam |
| VU | Vrije Universiteit, Amsterdam |
| VSNU | The Association of Universities in the Netherlands, representing the 14 Dutch research universities |
| WO | Research-oriented education (<i>wetenschappelijk onderwijs</i>), |
| VWO | <i>voorbereidend wetenschappelijk onderwijs</i> , "preparatory scientific education") has six grades and is attended from age twelve to eighteen. A VWO diploma provides access to the WO sector of tertiary education. |
| VMBO | <i>voorbereidend middelbaar beroepsonderwijs</i> , "preparatory middle-level applied education" lasts four years, from the age of twelve to sixteen. It combines vocational training with theoretical education. |

Chapter 1: Analysis and recommendations

Throughout this report we describe, analyse and comment on what is described in the SER and what we saw on our visit. We offer some observations on how we think some problems might be addressed and we provide some examples from international experience of how similar issues have been tackled. This chapter draws together these observations and suggestions. Subsequent chapters provide more detailed analysis.

1.1 Challenges inherent in the national context

The regional authorities and the higher education institutions in Amsterdam are operating in a national context which to some extent determines and constrains their scope for action. The key issues in this context are:

- Strengthening the capacity of the tertiary system for enhanced responsiveness and flexibility to address European and global transformations
- Greater efforts to integrate first and second generation non-Western migrant populations into the human capital and culture of the nation so as to encourage a more socially inclusive tertiary system
- A binary system of tertiary education which does not give adequate scope for variation in mission, programmes and modes of delivery within its two parts
- A relative lack of focus on the lifelong learning dimension of tertiary education

The Netherlands faces many of the same challenges as other European countries: a shift in focus from traditional physical capital and production factors to less tangible capital, where factors like formal education, lifelong

attracted to the city by its image and by the widespread knowledge and use of English. Nevertheless, compared to some other metropolitan areas in Europe, there is a feeling that Amsterdam is in danger of losing its advantage and of not reaching its full potential.

Advancing human capital development through education, research, and knowledge production is the key to transforming the Amsterdam city region into the national and global innovation cluster it aspires to be. All stakeholders must share this aspiration and recognise that research, highly skilled labour, entrepreneurship and knowledge intensive industry are key factors to achieve success.

There is a diverse, dynamic and developing higher education sector in the Amsterdam region. This is not a stagnant pond. The region has a strong research base and a high quality research based higher education sector. The main challenge is to find ways to align their capacities and the supply of graduates with the expectations and demands of the engines of growth in the private sector. For the region of Amsterdam as for others it may be necessary to create more incentives for firms to communicate their demand for highly skilled labour and for higher education institutions to meet these demands. More direct engagement between managers of higher education institutions and industry managers could support such a process.

1.3 Moving forward

The challenge for the Amsterdam region is to develop strategies reflecting the inherent qualities and values of the region. By making targeted investments in human capital the region can greatly enhance its innovative potential. Moreover, a large supply of highly skilled workers will help attract and retain firms and investment to the region. The region has a unique potential for combining its liberal mindedness, culture, creativity and diversity with its academic strengths. Although these are policy areas which are not entirely within the control of the region, special attention should be given to the development of lifelong learning policies and to building more flexibility into the binary system of higher education.

To reach its potential Amsterdam can and should make better use of the two legs it has to stand on: a strong knowledge base and strong businesses. Amsterdam's problem is that it has too many strengths and the metaphor of the two legs cannot be applied across the board. The two legs need to be connected in specific cluster areas. For example in the area of life sciences in which there is a strong knowledge base, the employment and business sector is weak, (outside the R&D sector itself). This underlines the importance of seeking to build ties to the other universities in the Randstad

working in similar fields. With stronger ties to Leiden and Rotterdam, for example, Amsterdam may find it easier, at least in so far as the life sciences are concerned, to succeed in a dynamic but highly competitive sector.

At the same time, the Amsterdam region has some very strong businesses which are not yet sufficiently connected to a strong knowledge and science base. One example is the financial sector, where the Duisenberg School is a laudable, but still small and fragile initiative; another is the creative industries and media sector where some exciting connections have been made but a more systematic approach is needed.

Higher education can and should be seen more as a service industry in itself. Several Middle-eastern states have identified higher education as a key to growth and sustainable development and Amsterdam with its strong global image –especially amongst young people - can be an education hub with the city as main attraction. This would entail solving related issues like housing and transport (for students). The Amsterdam University College development is a recognition on a small scale of this potential, but there is room for more.

The most important conclusion, and this is something of which Amsterdam is clearly already aware, is that a much stronger shared vision is needed. No group of experts can determine what that vision should be – that is something which the city and its people must work out for themselves – but we can offer our perspective on what we have seen. What is most striking is that while there is abundant evidence of initiative no clear shared ambition can be discerned. The relevant parties need to work on developing a clear narrative for the region. The municipality could take a stronger lead in this process building on the networks that exist. Strategic leadership is needed to reap the best benefits of the good position that Amsterdam has.

Once the vision is in place an action plan can be established. Some elements of that are already clear.

Given the present unemployment trends and weak perspectives for a resumption of growth in Amsterdam and the Netherlands, more focus is being given to the competitiveness agenda and ways to push it forward. The performance of the regional innovation system is under scrutiny, as are the contribution of the main actors. Higher education institutions attract particular attention in this context because policy makers at all levels increasingly see them not only as developers of young educated minds and transmitters of culture, but more bluntly as major agents of economic growth and a driving force for the creation of new products and new companies. In a nutshell, there is the feeling that HEIs are a resource that has been far from fully tapped.

The peer review experts certainly share this point of view and they have tried to analyse the implications. The first issue for the team has to do with the volume but especially **the economic relevance of the knowledge** generated and disseminated by the Amsterdam HE system. While the quality of higher education is good but not exceptional, scope for improvement (in the areas of HE attainment, and university-industry collaboration) should not be neglected. Excellence is required when competition is increasingly about innovation, i.e. about transforming information into valuable forms of knowledge. In the area, more research in relative terms is being executed by HEI thus raising the pressure for more demand driven R&D. There is a risk of Dutch disease syndrome. While the level of scientific publication in the two research universities remains high by international standard, the translation into new product and processes for the market is disappointing. In the UAS applied research is more in line with market requirements, but it suffers from bottlenecks, volume, and some relevance/quality problems.

The research universities must continue to aim for focus and to build centres of excellence in their research activity. Individually they are not strong enough to be world leaders in all fields; collectively they can hope to make a significant impact in selected areas.

A second concern addresses the problem of the **relative failure of HEIs to amplify their internationalisation strategy** in order to resonate with the global city formation process. In the 21st century, global cities are deeply transnational spaces; spaces associated with a fluid and evolving constellation of relations that cut across space at a range of scales. But they are, first and foremost, centres of calculation, of strategy, of control, and of innovation. Amsterdam clearly fits this definition. It is the place where many multinational companies, as well as international NGOs, have located their headquarters. Innovation potential is recognised with the presence of firms such as Shell, Microsoft, IBM, Logica, and TomTom. However Amsterdam's long history has seen its relative position within the global city hierarchy wax and wane over time. The question is then how the city-region's higher education institutions can – in the face of competing pressures to educate and research on the national and international scene – internalise the global city logic and map out a plan to enhance their role and integrate the "future of the city of intellect" (Brint, 2002). This said, we recognise that the Netherlands is a small country, and that Amsterdam's HEIs have critically important national, as well as European, roles to play. A key challenge then, is to benefit from and shape the global city context, and in doing so magnify Amsterdam's function as an engine of the Dutch and European economies.

Third, **connecting HEIs and business** remains a difficult task in Amsterdam, as elsewhere. There is considerable scope for improving the

diffusion and impact of the knowledge generated by Amsterdam's higher education institutions, for the benefit of the region. While large firms' representatives are often members of research university boards and while there are opportunities for industrialists to become adjunct professors, HEIs have reached into only a very small fraction of the SME population. New initiatives on mobility such as the programme for temporarily sheltering industry engineers and researchers in universities strengthen the links at the high end segment of technology but have not much influence on the relationship with SMEs. Practical steps to document and communicate data about the many links between HEIs and firms should be taken.

Effective interaction between education and the region is dependent not only on the transfer of knowledge but on the mobility of people. There is a need to stimulate direct HEI/cluster links through the enhancement of HEI forum and debate functions. Bridging the gap between firms and HEI can also be facilitated by the presence of intermediates and intermediary organisations. These organisations in the case of Amsterdam are fragmented and often relatively new making assessment of their impact difficult. Some economists have warned that such organisations may market research which has been initiated according to the traditional 'tech push' approach. While the team has found no sign of such a trend, this risk needs to be taken into account if this institutionalisation process is to expand.

The creation of the *lectoraten* has been an important development and the time is right to review the experience: whether they are achieving what is expected of them, whether those expectations are the right ones, and how well they are able to resist the pressure towards academic draft which besets the higher education sector.

Specifically at the level of technology transfer the review team noted the recent creation of TTOs in the two research universities and their still relatively limited scope and low level of investment. While expectations should not be too high in terms of return on investment, these initiatives are important to stimulate transfer of technologies from higher education research and to develop a culture of entrepreneurship among students. Emphasis should be put not only on obtaining patents but above all on exploiting them through licenses. Efforts to launch incubators and expand TTOs are long term endeavours. To bring about results, they need a certain degree of ambition and large scale approach encompassing industry research partnership, industrial extension and technical assistance and transfer of technology programmes as demonstrated by US experience. Expectations regarding the impact of TTOs also need to be tempered, for the historical record demonstrates that most TTOs lose money, and 'impact', broadly defined, can take decades to emerge amidst a litany of failed ventures. This said TTOs, and broader mandate university-based corporate relations

offices, have much potential in acting as key hubs in regional innovation systems, if well-resourced, respected, and powerful.

We note that there is no systematic policy, nor strategy, regarding the value of service learning or co-operative education more broadly. This needs to be addressed.

In terms of regional capacity-building the role and functions of the Kenniskring should be reviewed after 15 years of activity. The city should consider whether it can take on the role of providing more strategic advice. In this context, there is a need to develop a broader view of innovation that factors in the activities of NGOs and non-profit organisations and to devise mechanisms to enhance linkages between them, firms, HEIs, and government. A broader view of innovation would take into account emerging patterns of open access and open source knowledge production, and inventions with low revenue potential but high societal return. It should capitalise on Amsterdam's globally recognised history, and current status, as a place of creativity and free-thinking.

Finally, although it is not our role, nor are we competent, to comment on policies for the integration of inhabitants with a non-Western background, we were inevitably made aware of some of the tensions that the growth in numbers of the non-Western minorities has engendered and the scope for making greater use of their potential. The low participation rates of non-Western minorities are of concern at national level, and although progress has been made in terms of access to tertiary education this needs to be matched by improved completion rates.

Finding the right balance between complacency and self-criticism is not easy. Amsterdam has achieved great success and recognition in many ways. It is not a city in decline. Rather it is at the point on the 'S' curve identified by Charles Handy (Handy 1995) where it needs to reinvent itself for the future. That process has begun and must be pursued with vigour. Its people and its institutions offer great potential. Making the right choices and backing them is essential.

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Chapter 2: National education policy and the regional context

2.1 The Dutch context

This chapter summarises material from two principal sources: the 2008 OECD Review of Tertiary Education in the Netherlands¹, notably Chapters 2 and 10, and the Self-evaluation Report on Amsterdam (SER) prepared in 2009 by Bert Tieben and Theo Smid. Reference has also been made to the 2009 summary of the Netherlands education system available on Eurydice².

The Netherlands is a nation of 16.4 million people (2008). With a land area of only 41 530 square kilometres it is densely populated, especially in the west of the country. The Netherlands has long been a major trading nation and is relatively wealthy: in 2008 per capita Gross National Income (GNI) was USD 43 050 in Purchasing Power Parity (PPP) terms, the tenth highest in the world when very small nations are excluded. In 2008 the GDP of the Netherlands was USD 860 billion in PPP terms, 16th in the world and the sixth largest in Europe (World Bank data).

In 2008 most of value added was in services (73.6% of GDP) followed by industry at 24.4% and agriculture at just 2.0%. High technology exports constituted 29.1% of manufacturing exports (OECD).

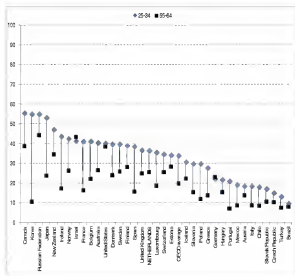
The nation is strongly networked within the global communications system, providing global advantages for the nation in both business and higher education. In 2007 there were 842 Dutch Internet users per 1 000 population compared to an average of 657 in the World Bank's high-income group of countries. There were 870 broadband subscribers in the Netherlands compared to an average 826 in the high-income countries, and 1 177 mobile phone subscribers per 1000 people (World Bank, ICT data).

As elsewhere in Europe, the population is ageing, and the main source of demographic growth and the driver of future educational expansion will be a combination of new immigrants and inhabitants with a non-Western background (this population group is on average younger and therefore more fertile). The number of inhabitants with a 'non-Western' background, principally from Northern Africa and the Middle East, is 10% overall but

exceeds 30% not only in Amsterdam but also in the three other large cities, Rotterdam, and the Hague. In these cities 51% of the population aged 0-14 have a 'non-Western' background³.

Figure 2.1 Population that has attained at least tertiary education (2009)

Percentage, by age group



Note 1: Countries are ranked in descending order of the percentage of 25-34 year-olds who have attained at least tertiary education. The year of reference for Chile is 2002 and for the Russian Federation is 2004.

Note 2: For technical reasons, these figures use Israel's official statistics, which include data relating to the Golan Heights, East Jerusalem and Israeli settlements in the West Bank.

Source: OECD (2009a), *Education at a Glance*, OECD Publishing, Paris.

In 2007 the proportion of people aged 25-64 with tertiary qualifications was 31% compared to an OECD average of 28% (see Figure 2.1). The level of qualifications in the Netherlands was below that in a number of high-income countries including Denmark, Norway, the United States, Canada,

Australia, Japan and Korea; but above the levels prevailing in Germany, France and Spain. The proportion of graduates in the 25-34 year old age group in the Netherlands (37%) is a little above the OECD average (34%). On this indicator the comparative position is stronger in the older age groups. Thus in the 45-54 year old group the Netherlands proportion is 30% compared to an OECD average of 25% (OECD, 2009a).

While the Netherlands continues to have a substantially larger share of young adults (25-35) with a long tertiary qualification than the OECD average (35% as opposed to 26%), it has only 2% of its 25-34 age cohort with a short tertiary qualification, as compared to an OECD average of 10%. The introduction of a two-year associate degree qualification is expected to narrow or eliminate this difference.

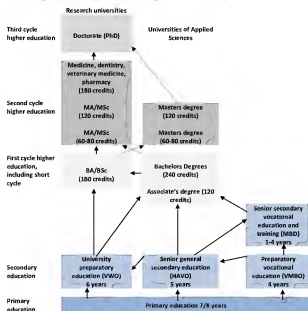
Workforce participation by women is lower than in some other OECD nations, at 55% of those aged 15-64 years, and is concentrated in part-time work, although many of these jobs occupy more than 32 hours a week. Part-time work is also increasing among men. However women continue to make advances in the professions. The balance between women and men in higher education is roughly equal. As in most OECD countries the rate of entry of young women into first degrees considerably outstrips that of young men, while men constitute the larger group in doctoral programmes at a ratio of three to two.

In the Netherlands 89.3% of 15-19 year olds are enrolled in education, which is above the OECD average of 81.5% but on par with Western Europe as a whole. Participation of the 20-29 year age group in the Netherlands (28%) is above the OECD average (24.9%). After 30 years age participation rates fall well below the OECD average, however. Just 2.7% of 30-39 year olds are enrolled in education as defined by OECD compared to 5.9% in the OECD as a whole, 13.5% in Australia and 12.9% in Sweden (OECD, 2009a). This suggests that in the Netherlands there is a relatively weak commitment to lifelong learning and professional upgrading in the award programmes that have significant labour market cachet. This problem may be embedded in social culture, in that older people do not see award programmes in tertiary education as an option, but if so the incentive structure does not encourage a change of values. If they have not enrolled prior to 30 years of age higher education students lose their eligibility for student loans and some tuition charges rise steeply. More than in many other nations, in the Netherlands higher education is seen as the preserve of the young.

2.2 The tertiary education system: facts, figures and traditions

Higher education is based on a three-cycle degree system, consisting of Bachelor, Masters and PhD levels, in conformity with the Bologna model (see Figure 3.1). The Netherlands has moved earlier and more comprehensively than most European nations in adopting this template though the transition is incomplete (Witte 2006).

Figure 2.2 Structure of the Higher Education System in The Netherlands

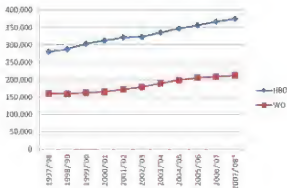


Source: Amsterdam SER

The two principal sectors of tertiary education are the research-intensive university sector (*wetenschappelijk onderwijs* - WO) and the technical or 'professional' institutional sector (*Hoger Beroeps Onderwijs* - HBO) made up of *hogescholen* (translated as Universities of Applied Science or UAS). There are 14 research-intensive universities including the Open University; eight academic medical centres and several publicly funded research institutes affiliated with the universities. There are 41 government funded UAS. In recent years the HBO sector has become more concentrated via mergers and some of its institutions now enrol more than 30 000 students. There is a division of labour between WOs and UAS (the 'binary system') in which the great majority of research functions and capacities are concentrated in the WOs. In contrast with academic staff at the research-intensive universities, few UAS staff hold doctoral degrees. On the whole UAS graduates are more specifically oriented to local labour markets and to professionally-oriented education. There is a greater emphasis on generalist preparation in WOs. Organisationally, individual academic units within the WOs on the whole enjoy greater autonomy than their UAS counterparts. There are mergers and cooperation across the binary line but it is the subject of continuing policy tensions, particularly in relation to research and the funding of Masters programmes.

The total number of students in higher education in the Netherlands in 2007-08 was 548 500. Of these 219 000 students were enrolled in the research intensive universities and 384 000 in the UAS (see Figure 2.3). Although the majority of students enter HBO or WO via the HAVO/VWO approximately 30% of MBO students do enter the UAS.

Figure 2.3 Student enrolment in the Netherlands by sector



Source: Amsterdam, SER, 2009

Beyond the binary system are designated (*aangewezen*) institutions. The operating costs of these institutions are not directly subsidised by the state; however, students eligible for publicly funded student grants and loans may use them to meet their study costs in accredited programmes at these institutions. There are nine institutes of this type at WO level and 62 at HBO level, typically quite small, enrolling a total of 60-70 000 students. Their share of total tertiary enrolments is just over 10%, and their role in the national system is modest.

There are approximately 7 500 full-time equivalent PhD students in Dutch universities and medical centres. In contrast with most other nations, being a doctoral student is a form of contract employment, normally lasting for four years and including teaching duties. A small number of PhD students study on the basis of scholarships. Students graduate from advanced research programmes at an average age of 25 years, making them among the youngest in the OECD.

By international standards Dutch students are very well prepared for higher education. The nation is in the top group for mean levels of proficiency in the OECD Programme for International Student Assessment (PISA) tests of mathematics and literacy among 15 year olds (e.g. for mathematics OECD, 2009a). Overall performance is so high that even lower

achieving school students in the Netherlands do quite well compared to students from other nations. Once Dutch students reach higher education they have a higher than OECD average completion rate, 71% compared to 69% (OECD, 2009a). This is a highly selected and culturally homogenous group by comparison with more open systems.

However, many secondary students are not destined for higher education. During secondary school, beginning at 12 years, students are streamed into three hierarchically ordered groups on the basis of academic potential: the VWO, the stream constituting the pathway to research intensive universities (the WOs), though some go the UAS; the HAVO which provides students for the UAS or MBO vocational training at tertiary stage; and the VMBO which prepares students solely for MBO tertiary training. In total about 60% of students enrolled in upper secondary education are in vocational programmes; and at the level of higher education about two thirds of all students are enrolled in the UAS rather than the research-intensive universities. Both the proportion of secondary students in vocational programmes, and the proportion of tertiary students in non-doctoral 'professional universities' (UAS) rather than the research intensive academic universities which enjoy the highest per capita funding and social status, are much higher than the OECD averages.

Students selected for the VWO stream tend to have very favourable educational and subsequent labour-market outcomes (see Table 2.1). All who qualify for entrance to the research-intensive universities are accepted; most are able to enter into their first choice programme. When applications exceed the planned number of places the universities have the choice of either expanding the enrolment beyond the planned level, or conducting a process of selection. In some faculties (e.g. medicine) selection is highly determined by ballot. During year 1 all students are advised on their subsequent studies. At this stage some will be excluded from further progression in their chosen programme. Thus the end of the first year is often the decisive moment when the future pathway is determined.

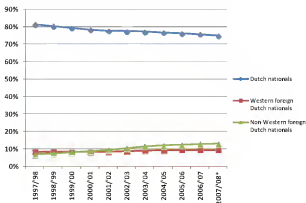
Table 2.1 Labour Market prospects by educational level

| | Graduates with good or very good labour market prospects 2007 – 11 (%) | | Unemployment (%) |
|-------------------|--|-------------------|------------------|
| Primary education | 0 | Primary education | 9.2 |
| VMBO | 50 | | 6.5 |
| MBO | 100 | HAVO | 6.4 |
| UAS | 27 | MBO(2&3), MBO (1) | 4.6, 3.1 |
| WO | 45 | UAS/WO bachelor | 2.6 |
| Total | 61 | WO Master, PhD | 3.3 |

Sources: ROA (2007), *De Arbeidsmarkt naar Opleiding en Beroep tot 2012*, *Researchcentrum voor Onderwijs en Arbeidsmarkt*, Universiteit Maastricht, ROA-R-2007/4, p. 20 and Statistics Netherlands Statline (2008), *Bevolking: burgerlijke staat, geslacht, leeftijd en regio*, <http://statline.cbs.nl/statweb/>

Nevertheless, once designated for the academic stream in secondary school, nearly all those so selected remain in it; and in that stream they are relatively well supported. At USD 79 625 cumulative expenditure per student over the duration of tertiary studies in the Netherlands is among the highest in the OECD area⁴ and compares with an OECD average of USD 50 547 (OECD 2009a). Thus the Netherlands combines a middling level of overall spending and participation with the concentration of tertiary enrolments at degree programme level and relatively generous support for the top group of students in the research intensive universities who are better resourced than in most other countries (OECD, 2006). The student loans system is also relatively generous to those eligible for it. Tertiary education funding is further discussed in section 2.3 below.

However the situation is different for those streamed below VWO level while at secondary school, whether in the VMBO or HAVO streams. Arguably, the three-track structure of secondary schooling inhibits the capacity of the Netherlands to lift total participation in the research-intensive universities and UAS, and leads to reduced participation and completion among those of a non-Western background whose school students are disproportionately streamed into the VMBO group (see Figure 2.3). The OECD review in 2005 noted that with the exception of the top echelon of academic research, higher education institutions are not exposed to a high level of open competition; and if they were it is unclear how they might respond. UAS instructors are less academically trained than are those in the higher professional education sectors in Germany and Finland.

Figure 2.4. Participation in tertiary education, relative shares, by ethnic groups

Source: Amsterdam SER, 2009

2.3 National governance and financing patterns

The Ministry of Education, Culture and Science (OCW) administers most government higher education programmes. Other departments also play a role, particularly in relation to research and innovation, including the Ministry of Economic Affairs. In 2006 the Netherlands spent 5.6% of GDP on education compared to the OECD country average of 6.1%. At tertiary level the comparative picture is somewhat stronger. Total financing of tertiary education at 1.5% of GDP was at the OECD average. As in other OECD countries, however, the share of this spending which came from public sources declined between 1995 and 2006 (OECD, 2009a (see Table 2.2 and Figures 2.4 and 2.5).

education sector was notably stronger at 26.5% than the OECD average of 16.8% or the EU-27 figure of 21.8%. (OECD, 2009b).

As noted the research intensive universities are strong in international terms - see Table 2.3.

Table 2.3. Academic Ranking of World Universities (Shanghai Jiao Tong University, 2008)

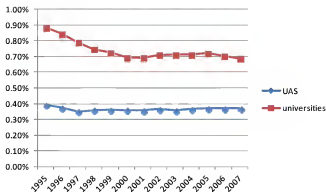
| Position | University |
|----------|--------------------------------|
| 47 | Utrecht University |
| 76 | Leiden University |
| 101-151 | VU University Amsterdam |
| 101-151 | University of Amsterdam |
| 101-151 | University of Groningen |
| 152-200 | Delft University of Technology |
| 152-200 | Erasmus University |
| 152-200 | Radboud University Nijmegen |
| 152-200 | Wageningen University |

Source: Amsterdam Self-Evaluation Report, 2009

The 2008 OECD *Economic Survey* of the Netherlands signalled the general recovery of the Dutch economy but warned of the economic dangers if key challenges (inter alia, the effect of the ageing population on fiscal sustainability, the need to increase labour-market participation and to open borders so as to tap into the asset of skilled immigrant workers) are not rapidly addressed. This report noted that productivity growth had remained sluggish which could be due to the relatively high weight of traditional industries in the economy and to insufficient innovation activity. In this latter domain, 2007 *European Innovation Scoreboard* (European Commission/MERIT, 2007) rated the Netherlands as one of the innovation followers rather than amongst leading nations such as Denmark, Finland and Germany. The country performed well in intellectual property and in transforming innovation inputs into outputs but did less well in the areas of entrepreneurship and applications. According to the 2008 OECD Review of Tertiary Education in the Netherlands, this is dubbed the 'Dutch paradox' in policy circles and is part of a more general problem. In the Netherlands it derives in part from the industry structure: the Netherlands is primarily a service economy and there is a limited number of large scale firms requiring R&D. The 'paradox' has stimulated a broad range of policy schemes, instruments and funding incentives that are designed to stimulate innovation and sustain industry-university and public-private partnerships. (OECD, 2008). It would now seem essential to accelerate this momentum. Of course,

funding is a key factor for HEIs (both research universities and UAS) to realise their full potential as key R and D and innovation actors (see Figure 2.6). This issue is considered in more detail in Chapter 3.

Figure 2.6. Public funding of universities and UAS (% of GDP)



Source: Amsterdam SER, 2009

As the governance of higher education in the Netherlands is predominantly a national affair it is the minister of education who ultimately is responsible for the proper functioning of the HE system. The most recent strategic agenda for higher education shows that the Dutch government aims to strengthen the autonomy of the HEIs as the executive bodies of this strategy, stating that the role of the government should be one of securing the right framework conditions to safeguard the public goals of higher education, including the quality, accessibility and efficiency of higher education.

This governance structure means that there is no formal role in higher education for other layers of government such as the provinces or the city councils. By and large the Amsterdam HEIs are autonomous organisations. They operate in a national legal framework and receive the main part of their budget directly from the Ministry of Education, Culture and Science (OCW).

The Ministry of OCW funds several programmes with regional impacts including the appointment of a growing number of lectors and knowledge circles at HEI. The RAAK Regeling (Regional Action and Attention for Knowledge Innovation) for example offers financial support to cooperation projects in the field of knowledge development and knowledge exchange between HEI and education and training centres. The Ministry of Economic Affairs (MINEZ) also uses various instruments to subsidise research in HEI and other public and R&D institutions on the supply side as well as on the demand side (e.g. knowledge vouchers).

2.4 The regional dimension in the higher education system

Dutch higher education legislation has a requirement for regional engagement but no major incentives, funding streams or monitoring of outcomes to support this requirement. There is no direct regional educational or scientific policy in the Netherlands established in the National Higher Education and Research Plan (HOOP) in the sense of a differentiated or regionally sensitive policy to meet different regional needs. There are many references to “regions” in HOOP, but what these establish is the generic importance of HEIs to their respective regional economies, and the need to make sure that they align their interests with regional stakeholders, thereby to maximise the overall regional benefit they provide.

This approach is linked to the geographical and institutional situation of the country and rooted in its history. The Netherlands is a relatively small country and in more or less every region access to higher education is adequate. Most HEIs have a history that goes back for decades if not centuries.

In the 1960s the government founded new universities in Twente and Maastricht with the specific aim of developing the region concerned. Since then the government has embarked on a policy of de-regulation of higher education. The Dutch system for higher education is nowadays characterised by a high level of autonomy for HEIs. HEIs have control and ownership of their campuses and finances. With lump sum budgeting they can set their own goals and strategy to achieve their goals.

The national government’s role has shifted from a state control model, prescribing the activities of HEIs, to a more detached supervisory model, involving evaluation of output, including some quantitative measures. The state has no role in the content or location of new studies programmes and courses. The government just checks for relevance to the (national) labour market and unwanted competition with existing studies within the region where a new field of study is put forward for funding.

Quality is monitored by the Netherlands-Flanders Accreditation Organisation (NVAO). It is argued that the process of de-regulation leads to more regional involvement. According to the OECD (2008), “de-regulation of tertiary education has allowed institutions more flexibility and seems to be paying off with increased institutional cooperation and innovation. Institutions have merged with one another; worked together to create more programmes based on student’s needs; and developed better working relationships in their respective regions, according to anecdotal evidence gathered in numerous interviews with institutional administrators.”

Therefore, the extent to which a university or other institution focuses on the region depends on the individual HEI. Similarly, Sijgers et al. (2005) concluded that regional considerations only played a minor role in policy-making. This role is slightly more developed for UAS, due to their function to educate professionals for the labour market. Conversely, research universities focus more on the advancement of research skills in particular.

2.5 Support for the regional mission

Although there is no explicit regional dimension in the Dutch policy framework on higher education, there still are some programmes to stimulate the cooperation of HEI’s with other HEI’s (research universities and UAS), local government and local corporate life (i.e. SME’s). Examples of these are Picken in de Delta, RAAK and the funding of structures for the local educational labour market (teacher academies and the schools – as employers- in areas with a high expected shortage of teachers for primary or secondary education are stimulated to work together towards solutions for their local situation). See Box 2.1 below.

The Ministry of Education, Culture and Science (OCW) supports regional missions. The *Lectoraten programme* is one of its main instruments. This is an important development within UAS and for their contacts with the region. With these *lectoraten* UAS can work on their relation with the regional labour market and the business and/or professional community. UAS are explicitly assigned to become a knowledge partner of the professional practice in a broad association. This brings UAS closer to corporate life (and local government). The principal effect of the programme has been the recruitment of a large number of applied professors with perceived relevancy to the local surroundings. These are small discretionary resources available for HEIs for regional activity. Some seed corn funding has also been provided for knowledge innovation in UAS and for innovative projects in knowledge circulation. HOOP creates an enabling environment for regional engagement without providing significant (differentiated) resources for capacity building.

For research application and third-stream (innovation) activities, the Ministry of Economic Affairs (MINEZ) is an important player and the main actor shaping regional policy for higher education. MINEZ believe that a failure to innovate is seeing the Netherlands lose ground to competitor nations in Europe and beyond. In recent years the Dutch Government has placed emphasis on meeting the Lisbon target of 3% GERD in GDP. The policy framework for innovation involves concentrating scarce resources on helping the most excellent research to be applied into innovation, and removing barriers to this commercialisation process. There are a range of instruments developed by MINEZ which provide subsidies for innovators, including in the university sector.

The Regional Directorate of MINEZ has developed a policy to strengthen the Dutch economy based on supporting pockets of economic excellence. This strategy, *Pieken in de Delta*, (hereafter *Pieken*) targets relatively limited economic development resources into key measures to strengthen the overall national economy (see Box 2.1). HEIs are important to *Pieken*, in particularly in the east and the north, where there are relatively few other innovation stimulating institutions demonstrating research excellence.

Box 2.1 National programmes that stimulate regional cooperation

Pieken in de Delta

In 2004 the Ministry of Economic Affairs launched *Pieken in de Delta*, a policy to strengthen the national economy by focusing on specific areas with potential. In these areas there is a key role for knowledge institutions including HEIs. Priorities are business parks, major ports (Amsterdam Airport and the Rotterdam Harbour), infrastructure, innovation and urban economies.

One of the designated areas is the North Wing of the Randstad, which in this definition includes both the Amsterdam metropolitan area and the province of Utrecht. The *Pieken* programme for the North Wing focuses on the following clusters: the creative industry, tourism, innovative logistics and trade, life science (including the medical cluster) and knowledge intensive business services (MINEZ, 2004). The mission of this part of the *Pieken* agenda is to develop the North Wing of the Randstad as a top region in Europe. It creates the conditions for the business development of world class activities within the designated areas. For 2009, there is a budget of EUR 17 million to foster this aim. The Ministry of Economic Affairs finances a maximum of 50% of the public investment. The other half must come from local authorities like city councils and provinces. In the Amsterdam region, the Amsterdam Topstad initiative profits from the *Pieken in de Delta* funds

Box 2.1 National programmes that stimulate regional cooperation (continued)

RAAK

The Regional Action and Attention for Knowledge Innovation (RAAK) is an arrangement of the Ministry of Education, Culture and Science (OCW). It intends to strengthen the relationship between UAS, regional training centres and SMEs to transfer knowledge. Approximately EUR 6-8 million is available on a yearly basis. Nowadays RAAK has been broadened to include the public sector also. The recent evaluation study of RAAK 2005-2008 (SIA, 2009) shows that RAAK has been well implemented by all participants. It has contributed to the development of UAS to knowledge institutes. According to the study, UAS have significantly improved their visibility in the regional knowledge and innovation networks.

The Dutch associations for UAS and research universities, the HBO-raad and VSNU, respectively, also stimulate their members (the HEIs) to cooperate on a local level, although the decision is up to the HEI itself. In the Green Paper *Towards A New Organisational Agenda*, the HBO-raad voices its expectation that there will be a broad variance within institutions (HBO-raad, 2009). Some will focus on international development, while others will focus on cooperation with secondary education and companies in their region. Furthermore, the VSNU and HBO-raad along with many other organisations, such as employers organisations for multinationals and SME, signed a declaration in 2007 known as “*Kennis Verzilveren*” to work together on the development of exploitation of knowledge. The Ministry of OCW states in its strategic agenda for higher education, research and science policy, *Het Hoogste Goed*, that the cooperation between HEIs and corporate and societal organisations should be strengthened.

2.6 The Randstad and its sub-regions

HE systems are important drivers for regional prosperity and well being. There is a growing awareness that HEI must do more than simply educate and research. The impact they are making in the world starts at their doorstep and concerns their own city or region. To be able to play their regional role, the Higher Education Institutions must engage with others in their regions, provide opportunities for lifelong learning, collaborate with the business community to boost innovation and contribute to the

development of knowledge-intensive jobs with added value to the community at large.

To optimise the initiatives taken by HEIs to enhance their regional role, it is necessary to define the region considered and its borders. Economic literature and OECD experience show that the functional region i.e. the region where people live and work, is probably the best concept to use because it aggregates most of the inhabitants capacities for generating wealth, for spending, and for networking.

This review considers the Amsterdam metropolitan area, more or less coterminous with the *Noordvleugel* (North Wing) of the Randstad (Regiegroep Noordvleugel 2040, 2008). The southern part of Randstad known as the South Wing is centred on the cities of Rotterdam and The Hague. The Amsterdam metropolitan area is a collaboration of regional and local authorities which includes the capital city of Amsterdam as well as 35 surrounding municipalities located in the provinces of Noord-Holland and Flevoland.

Both Randstad wings cover a surface that is larger than a city-region, but do not fall within the boundaries of a province and may stretch beyond its borders depending on the geographical definition used. There is no fixed definition of either wing; Utrecht, which originally used to belong to the North Wing, no longer does so as it decided to leave. The central government, however, still uses a definition of the North Wing that includes the area Utrecht-Amersfoort.

While the Randstad could be considered as a multi-core or polycentric area and a kind of umbrella for the metropolitan areas of Amsterdam and Rotterdam, Randstad-wide approaches are very slow to develop since no one person or organisation within government is currently responsible for this macro-region. The Randstad remains in many respects an artificial concept. It still barely exists as functional area, even if highly skilled workers increasingly commute throughout it and it has currency as a planning tool. The role of provincial government is relatively weak whilst that of municipalities is strong. Provinces, especially North and South Holland nevertheless increasingly concentrate on activities not covered by city-regions. For higher education institutions the potential for intra-Randstad cooperation is far from being fully exploited.

2.7 Higher education in the Amsterdam region

The Amsterdam metropolitan region has a strong concentration of Higher Education Institutions (HEIs). Amsterdam is the only city in the Netherlands with two research Universities: the Vrije Universiteit

Amsterdam (VU), and the University of Amsterdam (UvA). Two of the nation's academic medical centres are based in Amsterdam: AMC and VU-MC. There is however no internationally-recognised business or management school. The metropolitan region is also home to a number of UAS with multiple locations in the area: Hogeschool INHolland, Hogeschool van Amsterdam (HvA), Hogeschool IPABO, Hogeschool Markus Verbeek, Hogeschool TIO, Hogeschool Prachep, Stichting Hoger Onderwijs NOVI, Hogeschool Thorbecke and Hogeschool Haarlem.

The institutional landscape is dynamic: there have been a number of relatively recent mergers of UAS; there is an innovative joint governance arrangement between UvA and HvA; the creation of new institutions such as the Duisenberg School of Finance and Amsterdam University College; and there is a continuing desire – at least in Almere – to add new components to the higher education system.

There is also the opportunity of distance learning. In 1984, the Open University of the Netherlands was established in order to offer adults a means of pursuing higher education without formal admission requirements and at their own pace, through distance education⁵.

Enrolments in Amsterdam HEI in the last 10 years have increased at a rate superior to that in the Netherlands as a whole. The inflow of new students to Amsterdam-based UAS shows a very strong growth over the period accounting for nearly 15 % of all students registered in UAS in all Netherlands in 2008 (see Table 2.4).

The inflow of students to Amsterdam research universities also shows steady growth over the entire period 2002/2008 of around 32%, representing 22% of all Dutch university students (for a total population in the metropolitan region of about 13% of the Netherlands) (see Table 2.5). While the gap is widening between UAS and Universities, it is less marked in Amsterdam metropolitan region than in the Netherlands as a whole. In terms of tertiary education attainment Amsterdam performance is improving at a rate superior to the rest of the country.

Table 2.4. Student enrolment at UAS in the Amsterdam Metropolitan area

| | Hs van amsterdam | Hs iNHolland* | Amsterdam Hs voor de Kunsten | Hs IPABO | Geriet RietveldAc ademie | Total Netherlands |
|------|---------------------|------------------|------------------------------------|-------------|--------------------------------|----------------------|
| 1999 | 25346 | | 2106 | 1091 | 670 | 30338 |
| 2000 | 25729 | | 2179 | 1210 | 662 | 312905 |
| 2001 | 26598 | | 2341 | 1233 | 797 | 321741 |
| 2002 | 26184 | 13624 | 2480 | 1301 | 795 | 323744 |
| 2003 | 26740 | 16000 | 2547 | 1478 | 848 | 335890 |
| 2004 | 28557 | 15622 | 2628 | 1673 | 913 | 348835 |
| 2005 | 31223 | 15582 | 2728 | 1794 | 961 | 357023 |
| 2006 | 33575 | 14884 | 2884 | 1774 | 981 | 368056 |
| 2007 | 36193 | 14671 | 2902 | 1881 | 998 | 374835 |
| 2008 | 38139 | 14641 | 2940 | 1451 | 997 | 383833 |

*Data include only the campuses of iNHolland located in the Amsterdam metropolitan region

Source: Amsterdam SER, 2009

Table 2.5. Student enrolment at universities in the Amsterdam metropolitan area

| | University of Amsterdam | VU University Amsterdam | Total Netherlands |
|------|-------------------------|-------------------------|-------------------|
| 2002 | 21 489 | 15 694 | 1 78 553 |
| 2003 | 22 137 | 16 413 | 1 88 084 |
| 2004 | 23 889 | 17 100 | 1 98 088 |
| 2005 | 24 906 | 17 982 | 2 04 436 |
| 2006 | 25 694 | 18 651 | 2 07 159 |
| 2007 | 27 062 | 19 274 | 2 11 474 |
| 2008 | 28 331 | 20 984 | 2 19 018 |

Source: Amsterdam SER, 2009

For the two research universities the relatively strong increase in student demand is matched by good research performance (see Chapter 3). In terms of amount and value of scientific production (as assessed by the Shanghai Jiao Tong University ARWU) these Universities are ranked between 100 and 150 among World Universities and well in the upper half of the list of Dutch Universities. In terms of reputation (*Financial Times* assessment) UvA is well placed, but VU is less so.

Based on data from Elsevier's database Scopus, covering the period 2003-2007, University of Amsterdam is number 6 in Europe and number 53 in the world when looking at the normalised citation index⁶. The research intensive universities in Amsterdam belong to the leading universities in Western Europe. Based on bibliometric analysis, VU University Amsterdam

and University of Amsterdam score equally high on the ‘crown indicator’. Main fields of outstanding research are Clinical medicine; Biological Sciences; Psychology, Psychiatry and Behavioural Sciences; Social Sciences related to Medicine.

The broad range of research fields is also reflected in the fact that the Amsterdam region houses innovative companies in a wide range of sectors. Among the strong points which have been suggested as having considerable potential are the life sciences cluster, ICT and the creative industries. There are also business opportunities in trade and logistics as well as in the field of sustainable technologies.

The importance of these sectors is verified by statistical figures presenting the employment in Amsterdam by sector. One of the apparent motivations for focussing on the life sciences industry is the possibility to attract large companies which will in turn attract investment and create jobs. Currently 6.700 researchers at knowledge institutions are working in the life sciences field. Some estimates suggest that this number could be increased to 25.000 within the next decade⁷.

This needs to be appreciated against the background of budget trends. The per student publicly funded budget of universities in Netherlands has registered a significant decline in the last 10 years. It has also decreased in real terms and currently amounts to about 73% of total support, with 27% provided by private sources (tuition fees and private contributions). Table 2.6 gives a breakdown of the funding of higher education institutions in the Amsterdam area by funding stream. 1st stream funding is formula-based from public sources for all activities; 2nd stream is competitive research funding; 3rd stream is private income from tuition fees, commissioned research and contracts.

Table 2.6. Funding of HEIs in the Amsterdam metropolitan area by budget stream

| | Total income | 1st stream | 2nd stream | 3rd stream |
|--|--------------|------------|------------|------------|
| UvA | 586.4 | 395.3 | 26.9 | 164.2 |
| VU University | 398.6 | 245.0 | 20.0 | 133.6 |
| Hogeschool van Amsterdam | 232.3 | 159.4 | | 72.9 |
| Hogeschool Holland | 265.9 | 188.5 | | 77.4 |
| Amsterdamse Hogeschool voor de Kunsten | 46.2 | 41.8 | | 6.3 |
| Hogeschool IPAGO | 15.1 | 11.5 | | 3.6 |

Source: Annual reports individual HEIs, NWO (2008)

Notes

- 1 This report by Simon Marginson, Thomas Weko, Nicola Channon, Terttu Luukkonen and Jon Oberg is one of a series of which resulted from the OECD Thematic Reviews of Tertiary Education
- 2 www.eurydice.org
- 3 Subsequently in this report the term *allochtoon/enen* is used to designate Dutch residents having at least one parent born outside the Netherlands.
- 4 Education at a Glance 2009, OECD, Chart B1.5
- 5 The Open University may offer courses at both HBO and WO level. Other popular institutes that offer courses at HBO or WO level by distance learning are the *Leidse Onderwijsinstellingen* (LOI) and NCOI. Like the Open University, they often do not demand a particular educational background from their students.
- 6 The score is 1.73 indicating that publications from University of Amsterdam are cited 73% more often than the world average for the 2000 largest research institutions in the world.
- 7 Review of Higher Education in Regional and City Development – Self-evaluation report of Amsterdam, p. 73.

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Chapter 3: The contribution of higher education to innovation

3.1 HEI Research and knowledge output

The Amsterdam higher education system presents obvious strengths and good potential for development in the fields of knowledge production and diffusion. It is endowed with the biggest science faculty (UvA) in the country. UvA and VU have a broad range of research capabilities varying from financial service to theoretical chemistry, computer science and earth and life sciences. VU is known for its cooperation with companies and research organisations. Both universities have been able to compensate for decelerating student demand for science and technology training and courses through a recombination of their curricula towards more societal needs. This said, it was uncertain just how deep, and effective was cooperation between universities and public research laboratories.

Worries have been expressed about the impact of declining research support from the Ministry of Education, Culture and Science (OCW). In UvA and VU research departments have nevertheless been able to access money coming from other ministries by targeting interdisciplinary research and development funding linked with emerging issues including green growth, climate change, renewable energy and neurobiology. The present financial configuration also prompts HEIs to look for external sources of funds and to be more active in setting up bridges with industry, a domain which is often stressed in Amsterdam as being insufficiently explored by both partners. It remains that these strategies usually stand away from blue sky research (fundamental R&D) given the reluctance of firms to engage in long term investment with no guaranteed outcomes.

Progress has been more evident in developing synergies between higher education institutions. Cooperation between the two research universities has improved, for example in the life sciences between Academic Medical centre and the VU Medical Centre, although no particular framework for

partnership and alignment of research (such as for the technological universities in Delft/Twente/Eindhoven) has been established. Specialisation is said to be increasingly organised in a more or less spontaneous way between the two institutions according to the dimension of the market. Large markets favour competition while niche products or technologies require cooperation.

Despite these improvements and bearing in mind the self-evaluation report, and the statements in all of the meetings, the peer review team considers that the sense of satisfaction with the quality of the knowledge being produced in Amsterdam's HEIs was not sufficiently backed up, and too much of the onus for the problems was placed on the lack of bridges between HEIs and industry.

There is some lack of clarity regarding the criteria Amsterdam uses to judge the *quality and impact of their knowledge output*. Amsterdam's research universities do well in the most widely-recognised international rankings (Leiden Top 100, 2008; Shanghai Academic Ranking of World Universities 2008; Times Higher Education-QS, 2008), but these are university-wide aggregated rankings which are open to criticism insofar as they fail to reflect either the quality of teaching or institutional engagement with community and society.

The problematics of global rankings¹ aside, the quality of the knowledge being produced within particular departments, institutes and centres, and how this is changing over time remains relatively unknown. Disciplinary-specific rankings, where they exist, have not been provided. This said the Centrum für Hochschulentwicklung (CHE) is now working to rank at the intra-institutional scale, and their recent release² did note that the UvA came third (after Cambridge and Oxford) with 5 fields³ placed in the "excellence" category while VuA achieving 3 "excellent" scores⁴.

A better assessment of HEI performances is required and the review team recommends that the relative strengths of fields within Amsterdam's HEIs be better monitored and conceptualised, in a strategic development perspective. There are, for example, disconnects between some of those industrial sectors that have been prioritised for development, and the depth and quality of the knowledge base within Amsterdam HEIs. It is surprising, for example, that Mathematics is ranked so poorly in both of Amsterdam's research universities (CHE, 2009)⁵ yet finance (e.g., within business), financial mathematics (within the financial services sector), and aligned interdisciplinary fields such as computational biology require a critical mass of high quality and entrepreneurial mathematicians. Developments such as the Duisenberg School of Finance, which has started off slowly, are signs

that development initiatives are underway, yet some concerns were heard about the quality and sustainability of the Duisenberg School. Without a foundational 'pillar' of high quality mathematicians in situ, such initiatives may flounder.

A second issue concerns the relatively low level of expressions of interest (either from business or NGOs) to access the knowledge being produced within Amsterdam's universities. There were few quantitative or qualitative signs about how frequently, and in which ways, business seeks to engage with HEIs. Indicators are available via the TTOs, and select administrative offices within Amsterdam's HEIs, but data is not systematically acquired on this relationship. Lectors can help in diffusing knowledge to SMEs although they remain limited in number and do not seem to conscientiously cooperate. With the exception of a few technical or service related disciplines such as aviation, design, architecture and construction (HvA) or tourism, media, IT (INHolland), UAS research is in general considered to be less professionalized and of lower quality.

The expert review team considers that the diffusion of HEI knowledge in the Amsterdam region is far from achieving its potential. This is supported by previous analysis (e.g. OECD Randstad Review). The information base needs to be better documented and the design of HEI knowledge diffusion strategies (and especially research HEI) ameliorated and strengthened. A consolidation of the central government effort to improve the ties between Universities and especially UAS (RAAK subsidies, lectorates, voucher initiatives) and SMEs could help to close the gap in Amsterdam. Baseline data is needed, as is a strategy to collect and analyse time series data regarding the nature of linkages that are made between HEIs and firms regardless of size. In some HEIs this data collection responsibility is situated within the equivalent of the "external relations" or "university relations" division, which is often overseen by a senior Vice-Rector (or equivalent). Positioning such a unit at this level provides resources, authority, enhances direct and indirect feedback to senior leadership, and enables the diversity of units engaging with industry, and vice versa, to have a centralised portal to engage with.

One option for framing this type of organisational shift is the creation of a task force (or forces, within multiple HEIs) that focus on organisational structure (see Box 3.1). We offer for consideration an example from the United States. This structure is reflective of the specific political economy of the US, and the city-region UW-Madison is embedded in is worth considering, as is the idea of creating and/or formalising an external relations unit. The OCR answers to the Vice Chancellor for University Relations, who is charged with "coordinating the university's messaging and relationship-building strategies across a broad range of audiences, from the

campus community to legislators, parents, alumni, donors and friends across the world”, including strategic communications, government and community relations, corporate relations and economic development initiatives, visitor relations and programmes, parent (of students) communications, trademark licensing, and university partnerships with the Wisconsin Alumni Association and the UW Foundation. Such a structure is designed to free the TTO of acting as the main portal into the HEI, which allows it to concentrate on technology transfer alone. In some contexts TTOs are also relatively autonomous from universities, and this approach enables the university to engage with the TTO on an appropriate basis.

Box 3.1 Reorganising to Enhance Coordination and Focus

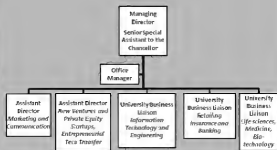
In 2003 the University of Wisconsin, a large public university with the oldest Technological Transfer Organisation (TTO) in the US, established a task force to reorganise in a way that reflected the complexity and opacity of the networks linking business to the university. The function of the Task Force was to convene focus groups and survey a stratified sample of Wisconsin's and other selected business leaders to determine:

- a) What kinds of university-business relations programmes and services do business leaders need from the UW-Madison in the areas of research partnerships, technology transfer and economic development collaborations (e.g., employment resources, continuing education, information services, consulting services, patents and inventions, laboratory services, research partnerships, special economic development projects and outreach for fund development purposes)?
- b) How do business leaders perceive the way UW-Madison currently applies its resources in the areas of research partnerships, technology transfer and economic development collaborations?
- c) How can the UW-Madison better communicate its resources in the areas of research partnerships, technology transfer and economic development collaborations?

The findings led to the creation of a single Office of Corporate Relations with the structure illustrated below:

Box 3.1 Reorganising to Enhance Coordination and Focus (continued)

Organisational Chart, Office of Corporate Relations, University of Wisconsin



Source: Office of Corporate Relations, University of Wisconsin

3.2 HEI and the Amsterdam global city context

Amsterdam HEI's knowledge strategy must reflect the framework conditions for regional innovation, that is, it should recognise the general characteristics of the global city-region that Amsterdam undoubtedly is, just as much as those of Amsterdam as a Dutch city-region. The logic of global city development fundamentally shapes the opportunities and constraints that exist (See Box 3.2). It sets Amsterdam apart from other cities in the Netherlands, including others in the Randstad. At the same time the HE system needs to support the global city formation process if the metropolitan region's long term competitiveness is to be strengthened.

Box 3.2 The Main Functions of a Global City

Saskia Sassen suggests that a "combination of spatial dispersal and global integration has created a new strategic role for major cities. Beyond their long history as centres for international trade and banking, these cities now function as centres in four new ways: first, as highly concentrated command points in the organization of the world economy; second, as key locations for finance and specialized service firms, which have replaced manufacturing as the leading economic sectors; third, as sites of production of innovations, in these leading industries; and fourth, as markets for the products and innovations produced. These changes in the functioning of cities have had a massive impact upon both international economic activity and urban form: cities concentrate control over vast resources, while finance and specialized service industries have restructured the urban social and economic order. Thus a new type of city has appeared. It is the global city."

Source Sassen, S. (2001) *The Global City*, pp. 3-4

Extra-territorial relations are intrinsic to the global city formation process. Amsterdam's universities have already embarked on the networking business with foreign academia. It is noteworthy, for example, that the University of Amsterdam is the 10th most significant university in the world with respect to collaborative research and publication with Indian researchers; researchers based in a country that has seen an 80% increase in publishing in the seven years from 2000 authors (Adams, King and Singh, 2009). Yet, it is unclear how academia plans to communicate to non-HEIs in the Amsterdam city-region about the knowledge that exists within Amsterdam about the distant territories (including other global cities), that key Amsterdam and Netherlands-located non-HEIs are dependent upon. For example, what roles do HEIs play in enhancing the level of knowledge of Amsterdam's global-scale actors about East Asia, or South Asia, via formal and informal educational programmes, outreach initiatives, and so on? In providing a diverse array of educational services and support, in communicating about Amsterdam's HEI's geographical knowledge bases, and in shoring up weaker but strategically important knowledge bases, Amsterdam's status and reputation as a place conducive to innovation could be enhanced.

Box 3.3 Foreign universities in the global city of Singapore

The University of Chicago's business and mathematics (via their financial mathematics unit) programmes are present in Singapore via a formal branch campus in the downtown central business district, and the University of Chicago is listed in the suite of HEIs sanctioned by the Singaporean Ministry of Education.

In addition, MIT (Boston), Technische Universität München (Munich), Karolinska Institutet (Stockholm), Georgia Tech (Atlanta) have all extended their networks into Singapore, and used this development process to enhance not just the research and teaching process (e.g., via the acquisition of research funding, industry feedback, joint research, and guest speakers in classes), but also the formation of UILs in Singapore that benefit both Singapore and the respective 'home base' cities of these HEIs.

The advisory board of Georgia Institute of Technology-NUS Logistics Institute – Asia-Pacific is made up seven people, five of whom are Singapore-based industry representatives. Georgia Tech's Singaporean presence acquires knowledge, feeds it back to Atlanta, and enables Georgia Tech to play a key role in enhancing the regional development process in Atlanta, a key air and road transport logistics node in the US system (Olds, 2007; on Georgia Tech, see Youtie and Shapiro, 2008).

And in October 2009 the Swiss Federal Institute of Technology (ETH) signed an agreement with Singapore's National Research Foundation (NRF) to establish a joint Singapore-ETH Centre for Global Environmental Sustainability, and an associated Future Cities Laboratory programme. The logic behind this joint venture is to generate new transnational forms of knowledge on key global challenges, and innovations that get translated into commercialisable knowledge (when appropriate) in both Europe and Asia.

Cooperation between Amsterdam's HEIs, and HEIs in those other global cities that Amsterdam is relatively dependent upon, should be intensified and better used in order to facilitate this process of knowledge acquisition and diffusion. This cooperation should target cities that have strengths like Amsterdam in finance, ICT, logistics, and sustainability following the example of Singapore (see Box 3.3). The list could include Atlanta, Boston, Chicago, Munich, Singapore and Zurich though this is not an exclusive list. More important than the list is the congruency or articulation between HEI geographical collaboration links and Amsterdam's technological comparative advantages⁶. This does not necessarily mean the establishment of branch campuses but it does imply a strategic deliberation about the nature of the 'global footprint' of Amsterdam's HEIs, and an assessment of

whether it is appropriate given the changing nature of the economy, and the firms using Amsterdam as a base. Options for a more significant global footprint include joint research centres, international collaborative degree programmes and executive training programmes.

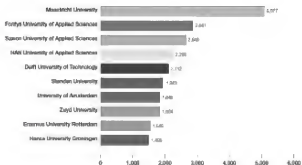
Many global city-regions are associated with a complex of HEIs. The emergence of innovative industrial clusters in these global city-regions, or the emergence of innovative institutions with social development agenda, depend upon global city-based HEIs. HEIs play a key role in grounding global flows of 'talent' (Saxenian, 2006), while simultaneously diversifying the services sector. Key cities (e.g., London) also play a critically important role in connecting a country (in this case the UK), but also a region (in this case Europe) to the rest of the world (Oxford Economics, 2007).

During the course of the OECD visit, it was unclear to the team, to what degree, various stakeholders sought to increase the number and proportion of EU and non-EU students in Amsterdam and the Netherlands via the framing of Amsterdam as a locale for higher education mobile people. It is noteworthy, for example, that Amsterdam receives a relatively small proportion of inbound students in the Netherlands, as evident in Figure 3.1 below. Moreover, the vast majority of these "foreign" students are German, followed by people from China.

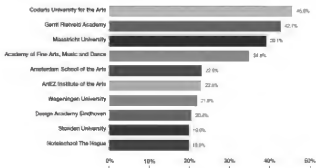
Amsterdam's attractive global reputation, and significant proportion of English-language program and course offerings, could be more effectively profiled and built upon to generate direct and indirect economic returns by increasing the number of foreign students. In doing so Amsterdam could play a role in increasing the "attractiveness" of the European Higher Education Area (EHEA) in the context of emerging global frameworks for both the Bologna Process and the European Research Area. The recent inauguration of Amsterdam University College represents a new and imaginative initiative, and while necessarily small-scale, is an example of how Amsterdam's uniqueness can be exploited.

There appears to be opportunity to better coordinate policy and strategy discussions about HEI internationalisation strategies, Netherlands' strategy via international higher education (in which NUFFIC plays a key role), Netherlands' immigration strategy, and Europe's global development agenda with respect to higher education and research, as well as skilled migration. HEIs should take steps to support and participate in this coordination effort.

Figure 3.1. Inbound foreign student mobility to HEIs in the Netherlands, 2008-09,
Thousands (top 10 institutions)



Percentage of total student population (top 10 institutions)



Source: Internationalization Monitor of Education in the Netherlands, Nuffic, 2009, p. 51

3.3. Academia and commercialisation of innovation

In the Amsterdam region there is a developing set of bridging activities, between HEIs and industry, including patenting, licensing, creation of spin-out companies, consultancy, contract research, on-demand training, and different forms of formal and informal advisory relationships. The Kenniskring Amsterdam (KKA), discussed further in chapter 6, is one of the most important of these.

Given that the commercialisation of knowledge produced by HEIs is a key part of the development process, it is not surprising that HEIs in Amsterdam have been active in creating and nurturing TTOs. As noted in the self-study, UvA/AMC, VU/VUmc and INHolland all have their own TTOs, with the UvA and VU TTOs “linked through IAMstarter, an organisation which receives support from the Technopartner programme of the Ministry of Economic Affairs” (SER, p. 78). The Life Sciences Centre Amsterdam provides an entry point to research and innovation at UvA and AMC; VU and VUmc, as well as Sanquin and the Netherlands Cancer Institute-Antoni van Leeuwenhoek Hospital.

While there was consistent praise for the quality of the work being done by the TTOs in Amsterdam, especially given the pressure being placed on them, three main dilemmas are evident relating to their organisation and mission and worth deliberating.

Return on commercialisation

Amsterdam’s TTOs have significant pressure on them to generate new streams of revenue via the commercialisation process. This is largely due to heightened expectations about what knowledge exploitation may engender, but also because of, as noted above, declining levels of national government support for HEIs in the Netherlands.

However, it is important to recognise that most TTOs in Europe and North America lose money, and the rule of thumb in long established and successful TTOs in North America is that it takes at least seven years to see any impact regarding decisions made at a particular moment of time. Even Stanford University’s Office of Technology Licensing (OTL) has noted that:⁷

The Stanford research community produces one invention disclosure for every USD 2 to 2.5 million of research funding. For the last 15 years, we have received an average of three to four new invention disclosures every week, for a cumulative total of more than 3 200

disclosures. Of this total, we have licensed over 800 inventions (plus over 400 licenses for the DNA patents alone), approximately one in four. Of these 800, about one-third produce income, but of these, only 22 inventions produce at least USD 100 000 per year.

There are divergent views in Amsterdam and the Hague on the expected pace and scale of “returns” from Amsterdam’s TTOs, including a “break-even” point when they have the capacity to stand alone without subsidy, and then when they will have the capacity to generate revenue. It is the review team’s view that these divergent views have the potential to disrupt the establishment of a long-term vision and position for Amsterdam’s TTOs in the innovation process. Given this, it is recommended that more research be conducted on the actual versus hoped for role of TTOs in the innovation process; and that Subsidieregeling Kennis Exploitatie (SKE) subsidies from the Ministry of Economic Affairs not be halted in 2010.

A strategy needs also to be put into place to communicate more effectively about the nature and impact of knowledge transfer, including the commercialisation of knowledge, to key audiences in Amsterdam as well as in the Hague. The levels of understanding about knowledge transfer seem highly variable, which can lead to ideological conflict, lack of take-up with respect to opportunities, and unrealistic expectations about the nature of the development process.

Further, it is recommended that the Government of the Netherlands consider providing a significant endowment to establish, in perpetuity, a self-funding foundation that would provide funding on a competitive basis to support the activities of university TTOs. This could be modelled on the endowments that are managed by select North American TTOs who successfully use them to propel the innovation process.

Conceptualising the TT process

In Amsterdam technology transfer issues linked with university research do not seem to be sufficiently addressed in a strategic way. TTOs managers seem now to favour earlier exit approaches and handing over the spinoffs on the market. They are more concerned with the cost involved in the valorisation process. However the strategy is not clearly conceptualized and the role for low-revenue potential technologies, including open access innovations remains uncertain.

The North American experience brings food for thought on these matters. It is noteworthy that some of the most successful TTOs in North America are broadening rather than narrowing their understanding of knowledge transfer/mobilisation/exploitation. By placing less exclusive

emphasis on financial returns to the University and looking increasingly at how university research can impact society and support jobs, industry productivity and innovation, these TTOs are changing their practices. They are evolving them from a transaction-based system to a system based on developing ongoing relationships with industry, government and other partners. A good example is the University of British Columbia's University-Industry Liaison Office (UILO) – see Box 3.4 below.

Box 3.4 Enlarging TTO perspectives and shifting to a broader set of support services: The experience of the University of British Columbia

Over the past two years, the University-Industry Liaison Office (UILO) has been examining and changing its practices to adapt to the new environment, developing standards appropriate for the University of British Columbia's status as a leading international institution. As a result the UILO has started to provide a broader spectrum of support services that embrace the concept of industry engagement through multiple channels: people, knowledge, collaborative research, intellectual property, and entrepreneurship and economic development. While these changes will continue over the coming years, the UILO has already been:

- a) shifting the control of intellectual property to individual researchers in order to become more flexible and sensitive to industry sector considerations;
- b) developing new ways of distributing many new discoveries that may not have a large financial potential but can nonetheless support a broader level of innovation;
- c) acting as a leading contributor to the creation of principles to allow the developing world vital access to university inventions;
- d) partnering with UBC faculties to develop new opportunities and resources for entrepreneurs within the UBC community; and
- e) devising new ways of measuring the effectiveness of technology transfer and sponsored research activities that go beyond financial values to look at broader social and academic impacts.

Source: University Industry Liaison Office Annual Report 2008/09, University of British Columbia, see: www.uilo.ubc.ca/_shared/assets/uilo_ar_20098562.pdf, accessed 16 February 2009

In this perspective the three main stages of technology transfer: research, knowledge mobilisation, commercialisation) are viewed in a less

linear fashion than is traditionally the case (See Figure 3.2 below). Key aspects of knowledge mobilisation include working to develop open access/open source outcomes, low revenue potential/high societal return inventions, innovative repositories of key knowledge, and so on. Such a conceptualisation of technology transfer has the potential to build support within broader segments of Amsterdam's HEIs, and within innovative non-profit sectors located in the city-region. However, it would be important to be cautious about extending the mandate of over-stretched TTO offices unless the broadening mandate were backed by additional resources.

Figure 3.2. New opportunities for developing and disseminating research discoveries (The University of British Columbia, 2009)



Source: University of British Columbia

Redeploying the TTOs

The review team noted that the mission, and organisational location, of Amsterdam's TTOs varies widely. This is to be expected, though the team was somewhat surprised to discover that the relatively small (17 persons) Bureau KennisTransfer (BKT) at UvA had such a broad array of responsibilities (as noted in the Self-evaluation Report, p. 79). The BKT is directly responsible to both the vice-Chairman of UvA and the Chairman of AMC, thereby making a strong connection with both boards. With its two branches it not only assists researchers at UvA and its medical centre AMC in applying for research and educational subsidies but also provides information about contract research, business development and licenses. In addition BKT fulfils a regional role (as the intermediary between researchers and external parties in the Amsterdam region), a national role (links with STW) and an international role (links with the EU Commission). Furthermore BKT participates in several regional innovation organisations

Notes

- 1 See for example articles by Ellen Hazelkorn and by Peter West in *Higher Education Management and Policy*, 21/1, OECD, Paris 2009.
- 2 *Identifying the Best: The CHE Excellence Ranking for Natural Sciences, Economics, Political Science and Psychology in Europe, 2009*.
- 3 Chemistry, Economics, Physics, Political science, Psychology.
- 4 Biology, economics, psychology.
- 5 The broad based methodology that CHE has employed highlights some aspects of the quality of components highlights some aspects of the quality of components of Amsterdam-based universities, though the key dimensions (Number of publications in the web of science; Citations (normalized to the international standard); Outstanding researchers; Number of projects in the Marie Curie programme; Student mobility; Teaching staff mobility; Erasmus-Mundus-Master; Book citations) do not necessarily lead to knowledge production that enhances UILs.
- 6 Prime Minister Jan Peter Balkenende, Members of the Innovation Platform, and Members of the Research and Enterprise Council were in Singapore in late October 2009 meeting with Singapore's National Research Foundation, the same agency that is supporting ETH and MIT research on sustainability, cities and transport, all fields Amsterdam-based HEIs have recognised capabilities in.
- 7 http://otl.stanford.edu/about/about_history.html , accessed 1 December 2009.

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Chapter 4: The contribution of higher education to human capital development

4.1 Provision of skills for the labour market

The Netherlands has an internationally recognized university system with world class research and education and the Amsterdam region is home to a number of high quality higher education institutions covering a broad range of teaching and research fields.. Compared to many other regions in the OECD area and the rest of the Netherlands, the proportion of people with tertiary education qualifications in the Amsterdam region is generally high. However, Amsterdam lags behind compared to metropolitan areas such as London, the Flemish Diamond in Belgium and Paris. The Netherlands is a small country with relatively small distances between the national knowledge and innovation clusters. Taking into account that the area around Amsterdam within a radius of approximately 75 km has more than twenty higher education institutions – including four universities in the top 100 THE-QS ranking (2009)¹ – this indicates an unfulfilled educational potential (see Figure 4.1).

Figure 4.1. Map of The Netherlands



The Amsterdam region has a very strong research-based higher education sector. While in most aspects an advantage it also comes with a potential risk. Higher education institutions with a strong theoretical and research-led orientation tend to be primarily supply-driven. The risk is that universities focus on pre-established areas of excellence rather than the demands of the labour market and opportunities that flow from existing economic clusters. A strong university system cannot be created by research excellence alone. The overall system should be aligned with the demands and needs of society. Interviews during the review visit revealed that leaders at the universities are aware of this. However, the labour market can and should play a more active role in evaluating the relevance of the research and education strategies of the HEIs in the Amsterdam region.

A study published by the Lisbon Council (2008) compares the university systems from 17 leading industrialised countries. It compiles six sub indicators (Inclusiveness, Access, Effectiveness, Attractiveness, Age-Range, Responsiveness) into an overall ranking of a countries university system. The study ranks the overall university system in the Netherlands 13 out of the 17 with a score substantially below the best. Data does show that the Netherlands rank among the best when it comes to accessibility and inclusiveness. A main challenge however, is to create an educational strategy that prepares the high number of graduates for the demands and needs of society (see Table 4.1).

Table 4.1. University Systems Ranking: Accumulated relative ranking of sub-indicators

| Rank | Country | Score |
|------|-----------------|-------|
| 1 | Australia | 30.6 |
| 2 | UK | 31.1 |
| 3 | Denmark | 39.1 |
| 4 | Finland | 40.6 |
| 5 | USA | 49.0 |
| 6 | Sweden | 49.2 |
| 7 | Ireland | 49.2 |
| 8 | Portugal | 54.3 |
| 9 | Italy | 60.9 |
| 10 | France | 62.2 |
| 11 | Poland | 64.4 |
| 12 | Hungary | 64.5 |
| 13 | The Netherlands | 69.6 |
| 14 | Switzerland | 70.3 |
| 15 | Germany | 72.5 |
| 16 | Austria | 76.4 |
| 17 | Spain | 79.4 |

Source: University Systems Ranking: "Citizens and Society in the Age of the Knowledge" (Lisbon Council, 2008, pp. 3-4).

Compared to other regions, Amsterdam is not sufficiently able to align the strategies of the different stakeholders in the higher education sector and industry. An important finding in the SWOT analysis from the SER report is the lack of structural monitoring of labour market developments. As a result no solid tools exist for adjusting educational programmes based on hard evidence of articulated demand. Higher education institutions in the Amsterdam region could draw on experiences from other OECD countries where external stakeholders have a say in regard to institutional management and the development of study plans and content. There are successful initiatives to follow such as the Centre for Amsterdam Schools

for Entrepreneurship (CASE). This is a programme aimed at improving education in the field of entrepreneurship at UAS and research universities in Amsterdam. CASE brings together stakeholders from universities, business and the municipality and organises networking events, workshops, and summer schools². CASE can be a model for the region.

It is important to stress that the responsibility does not rest on HEIs alone. In the Netherlands university departmental budgets are primarily allocated on the basis of publications and student numbers. This presents the universities with a potentially undesirable incentive to invest based on inputs and basic research productivity. The Amsterdam region would benefit from better aligning reward accountability structures with success in responding to labour market demands.

4.2 Flexibility in, and coherence of, the tertiary education system

The Netherlands has a binary system of tertiary education with two types of programmes with separate access requirements and structures. The linkages between research universities and universities of applied sciences are characterised by insufficient opportunities for credit transfer and progression, which is a barrier for realising the full educational potential.

An example of good practice is the institutionalised collaboration that has been established between the Hogeschool van Amsterdam (HvA) and University of Amsterdam (UvA.). This partnership enables students to have a more flexible course of study and eases the transition of students graduating from universities of applied sciences to research universities. This model, however, needs to be further developed and is not yet implemented between the other HEIs in the area. It is important to recognise the strengths of the different institutions. The universities of applied sciences traditionally have stronger ties to industry and professional organisations. Combined with the research based education at the research universities these partnerships present new opportunities. A desirable approach would be to strengthen the collaboration with research universities and develop more flexible study programmes, providing additional learning opportunities.

Special attention should be devoted to lifelong learning. In order for workers to stay competitive and add value to the economy they need to continuously enhance their skills. The Netherlands also faces an ageing population, and a general enhancement of the qualifications of the existing workforce is one of the most effective ways of increasing competencies in the work force.

Around 50 percent of employees in private companies with more than 100 staff participate in lifelong learning. This proportion is less than 25% when it comes to small- and medium-sized companies which traditionally have the largest skills deficit. Significant potential exists for providing additional incentives for employees from these companies to participate in training activities.

Within an advanced knowledge economy, on-the-job training cannot substitute for research based higher education conducted by university staff. The self-evaluation report also points to the absence of a sense of urgency in political circles and the business community in the region when it comes to action upon the need for further and adult education. Table 4.2 shows that the proportion of the population between 30-39 enrolled in education institutions in the Netherlands as less than 3% (2.7%) and only 0.7% for the age group 40+.

Table 4.2: Proportion of the population enrolled full-time and part-time in public and private learning institutions (Selected countries).

| Percentage of the population enrolled full-time and part-time in public and private learning institutions | | | | |
|---|-----------------|-----------------|-----------------|------------------------|
| | age range 15-19 | age range 20-29 | age range 30-39 | age range 40 and above |
| Australia | 82,3 | 33,1 | 13,5 | 5,8 |
| Austria | 79,0 | 21,8 | 3,5 | 0,5 |
| Belgium | 94,4 | 28,3 | 8,5 | 3,8 |
| Denmark | 83,3 | 38,2 | 8,1 | 1,5 |
| Finland | 87,9 | 43,0 | 14,4 | 3,4 |
| France | 85,7 | 19,5 | 2,8 | N |
| Germany | 88,1 | 28,7 | 2,5 | 0,1 |
| Hungary | 88,8 | 25,1 | 5,9 | 0,8 |
| Ireland | 89,7 | 20,8 | 5,8 | 0,2 |
| Italy | 80,0 | 21,0 | 3,5 | 0,1 |
| Netherlands | 89,3 | 28,0 | 2,7 | 0,7 |
| Poland | 93,1 | 31,0 | 4,3 | x(8) |
| Portugal | 77,3 | 20,8 | 3,7 | 0,8 |
| Spain | 80,4 | 21,5 | 4,0 | 1,1 |
| Sweden | 87,0 | 34,5 | 12,9 | 2,9 |
| Switzerland | 84,4 | 22,7 | 3,8 | 0,4 |
| UK | 71,4 | 17,3 | 5,7 | 1,7 |
| USA | 79,9 | 22,8 | 5,5 | 1,4 |

Source: Modified table based on Education at a Glance 2009 table C1.1. (OECD, 2009a, p. 301)

The Netherlands is not among the leading OECD countries when measuring higher education institutions provision lifelong learning activities (see Table 5.2)³.

Table 4.3: The proportion of the population in the age range 30-39 ranked by percentage in selected countries

| Percentage of the population in the age range 30-39 enrolled full-time and part-time in public and private learning institutions | | |
|--|-------------|------------|
| Rank | Country | Percentage |
| 1 | Finland | 14,4 |
| 2 | Australia | 13,5 |
| 3 | Sweden | 12,9 |
| 4 | Belgium | 8,5 |
| 5 | Denmark | 8,1 |
| 6 | Hungary | 5,9 |
| 7 | UK | 5,7 |
| 8 | Ireland | 5,6 |
| 9 | USA | 5,5 |
| 10 | Spain | 4,0 |
| 11 | Switzerland | 3,8 |
| 12 | Portugal | 3,7 |
| 13 | Austria | 3,5 |
| 14 | Italy | 3,5 |
| 15 | Netherlands | 2,7 |
| 16 | France | 2,6 |
| 17 | Germany | 2,5 |

Source: Modified table based on Education at a Glance 2009 table C1.1. (OECD, 2009a: 301)

Policy initiatives must be implemented to ensure a more effective provision of lifelong learning. Examples of good practices from other countries could serve as inspiration for the Amsterdam region. In Denmark, for example, there has been an extensive increase in the research based lifelong learning offers in the recent year, partly organised by the Danish University Extension, which is a national organisation with regional offices that arranges research based lecture sessions and courses in collaboration with university researchers (see Box 4.1).

Box 4.1 The Danish University Extension in Aarhus

Aarhus University collaborates directly with the Danish University Extension (Folkeuniversitetet), and most of this lifelong learning institution's lectures and courses take place on Aarhus University's campus. The Danish University Extension is a non-profit, demand driven organization mostly financed by the participants, with a minor public subsidy. The idea behind the Danish University Extension is to bring the general public up-to-date on the newest scientific theories, methods and results. Anyone can attend the courses and lectures and participants are a cross section of the adult population from about age 18 to third age.

Danish University Extension in Aarhus offers approximately 600 lecture sessions and courses a year within many different scientific areas. More than 750 active researchers from Aarhus University offered lectures under the auspices of the Danish University Extension in 2009. This creates a unique link between the universities and society.

There has been a massive increase in the influx of applicants and lectures offered in the recent years. With approximately 35 000 participants in 2009 it was more than five times higher than in 2 000 and one of the most popular learning institutions in the region.

4.3 Training and attracting talent

An important resource for building the region's stock of advanced human capital is the attraction of human capital from abroad. Evidence suggests that global mobility of the highly skilled is on the rise. The Amsterdam region has a potential for attracting skills at a relatively low cost by offering quality jobs and good living conditions.

Moreover the Amsterdam region can improve on internal social mobility. The proportion of inhabitants with a non-western background in the Amsterdam metropolitan area is almost twice the national average in the Netherlands. This group is far less likely to participate in higher education and further education than Dutch nationals⁴. Participation from minorities with a non-Western background is increasing, which is considered positive. However, the completion rates are still substantially lower for *allochtonen*⁵ compared to other students, suggesting that emphasis should be put on both attracting and retaining the minority group students⁶. Even though the participation rates for the *allochtonen* in higher education are increasing, so is the general participation. This means that the educational gap between ethnic minorities and the Dutch national still needs to be reduced⁷. The

region could benefit from a substantial upgrading of its internal human capital, and it must ensure increasing learning opportunities particularly for its youngest and less advantaged populations.

Higher education institutions are quite successful in attracting international students, but in general, compared to other regions, the Amsterdam region is not very effective in attracting and retaining foreign knowledge workers. Part of the explanation is found in the policies on immigration. Complicated rules and regulations, integration tests and fees have a deterrent effect. Even though the bureaucracy has been simplified, there are still further steps to be taken. The cost of a work permit today in the Netherlands is EUR 750 for a highly skilled migrant while a self employed person and students pay approximately EUR 430⁶. OECD data suggests, that the cost of a work permit in the Netherlands is substantially higher than in neighbouring countries such as Belgium, Germany, France and the United Kingdom⁷.

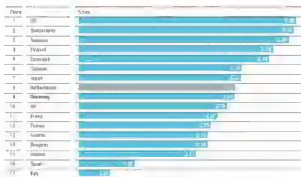
While working to dismantle barriers, the Amsterdam region could benefit from developing a branding strategy, which is based on the inherent qualities and values of the region. Moreover, the region could improve its attractiveness by developing support services that ensure a professional welcome and the integration of highly skilled migrants into the Dutch society. Data shows that investments in ancillary services are almost non-existent. The HEIs could benefit from investing more in student services to ensure that talent coming to the region have a positive experience from the day of arrival.

4.4 Contribution of higher education institutions to a coherent regional innovation system

Surveys seem to indicate that the Dutch innovation system is underperforming when compared to leading European innovation systems. It produces fewer innovative products and offers fewer innovation services. The Federation of German Industries publishes an annual comparison the innovative capacity of 17 leading industrialised countries. In addition, the indicator also focuses on government innovation policies and the social climate of innovation in the countries concerned. The report supports the observation that the innovative capacity of the Netherlands is not yet at the highest level. Out of the 17 countries the Netherlands ranks 8 and places itself in the mid range, well below the established leaders which include Switzerland, Sweden, Finland and Denmark (see Figure 4.2). When measuring the innovative capacity of companies the Netherlands ranks 9, but with a score in the lower end of the mid ranging nations (BDI, 2009,

p. 5). This supports the observation the companies in the region are not reaching their full potential in the innovation processes.

Figure 4.2. Innovative capacity of the leading industrialised nations



Source: Modified table based on "Innovation Indicator for Germany 2009" (BDI, Deutsche Telekom Stiftung (2009), p. 2)

Given the importance of the Amsterdam region in the national economy, it would be worthwhile to consider whether the strategies of stakeholders in higher education and key players in industry are sufficiently aligned. The highly complex regional innovation system and governance structure pose a challenge as suggested in the self-evaluation report¹⁰. Compared to other regions Amsterdam will have a competitive disadvantage when it comes to aligning the strategy for an efficient regional innovation system. The complexity of the structure and national regulation prevents an effective approach to innovation stimulation¹¹. It is a main concern for the Amsterdam region whether the innovation taking place does make a sufficient contribution to opening new markets.

Regional policies nevertheless lack a clear framework and a more joined up government approach would help to enhance the regional agenda. In the case of Amsterdam greater attention should be given to the fragmentation of HEI research and to better tap the potential offered by cooperation within the Randstad framework. The region has experienced the rise of many promising innovative projects and collaborations, but has not yet seen enough of these consolidate. There is a need for increased political

attention and a focused innovation strategy. Policy makers and stakeholders need to agree on clearly defined strategic goals. Fragmented success stories – even if high in numbers – are not sufficient to create a sustainable innovative growth layer.

Advanced human capital through education, research and knowledge production is the key factor in transforming the Amsterdam region into the national and global innovation hub it aspires to be. All stakeholders must share this aspiration and recognise that research, highly skilled labour, entrepreneurship and knowledge intensive industry are key factor to achieve success.

As revealed in a SWOT analysis, the region does not attract enough private investment into higher education and research whereas the public investment is actually above the national average. This indicates a need for a closer collaboration between the public and private sector. Also, a point of concern is that R&D spending among companies in the Amsterdam region is below the average for the Netherlands (see Table 4.3).

Table 4.3: R&D expenditures

| | R&R Expenditures by type of institution (% of regional product) | | | |
|----------------------|---|------------|-------|-------|
| | Companies | Government | HEIs | Total |
| Noord-Holland (2002) | 0.85% | 0.26% | 0.47% | 1.58% |
| The Netherlands | 0.98% | 0.24% | 0.50% | 1.72% |

Source: Self-evaluation report of Amsterdam, second draft Aug. 2009 p. 29

There are examples of good practice. Some higher education institutions offer educational programmes with a regional focus and a database has been established where small and medium size companies can identify and announce research areas of particular interest. More instruments of this nature should be developed and mainstreamed based on lessons learned.

Several OECD countries including the Netherlands have had success supporting the formation of public-private research consortia where different players are brought together to work on a common theme. The investment is made in linkages rather than providing subsidies for companies, an approach which traditionally have raised many issues regarding additionality. It is important that companies are not just subsidised, and as a consequence make investments they would have made them selves under any circumstances. Evidence suggests that one of the most effective methods of knowledge transfer is the mobility of human capital between sectors. The Amsterdam region could do much more to support the insertion of highly skilled labour

and young researchers into small and medium size companies with low capacity to innovation and absorb knowledge.

Notes

- 1 University of Amsterdam (49), Leiden University (60), Utrecht University (70), Delft University of Technology (83)
- 2 Centre for Amsterdam Schools for Entrepreneurship, www.case-amsterdam.nl.
- 3 Other indicators (CBS, 2009) do suggest a higher proportion for this age range (approx. 20 %)
- 4 OECD Reviews of Tertiary Education: Netherlands, 2008, p. 52
- 5 Allochtonen: Dutch resident having at least one parent born about The Netherlands
- 6 INHolland, Annual report 2008, p. 16.
- 7 De Jonge and Berger, 2006, p. 50.
- 8 See: www.ind.nl/en/Images/0912%20leges_ENG_tcm6-76140.pdf
- 9 OECD Territorial Reviews, Randstad Holland, Netherlands, 2007: 139
- 10 Review of Higher Education Institutions in Regional and City Development – Self-evaluation report of Amsterdam, pp. 56-57
- 11 Review of Higher Education Institutions in Regional and City Development – Self-evaluation report of Amsterdam, pp. 80 - 84

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Chapter 5: The contribution of higher education to social, cultural and environmental development

Introduction

The role of higher education institutions (HEIs) in regional development is a multifaceted and evolving one. As noted in *Higher Education and Regions: Globally Competitive, Locally Engaged* (OECD, 2007) both the drivers for regional engagement, and the barriers to regional engagement, are in the process of being reconfigured. One of the key objectives of the adjustment process is the enhancement of HEIs contribution to the regional development process through the development of dynamic and sustainable linkages between HEIs, industry and government. The outcome of this engagement is, in theory, a more vibrant innovation process, and in some cases the development of new streams of revenue for HEIs.

Yet there is another, often overlooked, element to the regional engagement imperative -- that of social, cultural and environmental change, ideally of a positive nature, that is spurred on by HEIs that are regionally cognisant of their presence, operations, and effects. The purpose of this chapter is to explore some dimensions of this aspect of the development process in Amsterdam, and make recommendations as to how the evident progress that is being made in Amsterdam could be further enhanced. It is important, however, first to reinforce some key points about the unique nature of Amsterdam.

In this regard, an audit could usefully be made of the extra-territorial relations of transnational firms with offices in Amsterdam, and the Netherlands more generally, and what mechanisms, if any, HEIs should create to build linkages to firms abroad.

First, as noted in the self-study, and in Chapter III, Amsterdam is a global city. Global cities are posited to act as:

- command points in the organisation of the world economy;
- key locations and marketplaces for the leading industries of the current period, which are finance and specialised services for firms;
- major sites of production for these industries, including the production of innovations.

(Sassen, 1994, p. 4)

Given these functions, and the gateway role of global cities with respect to human mobility, cities such as Amsterdam experience relatively strong social and cultural change dynamics. More specifically, global cities are associated with volatile economies, dense nodes of information and reflexive social networks, tendencies towards social polarisation, globalised property markets, social diversity (through migration in particular), cosmopolitanism, creativity, and vibrancy. Global cities can be represented as the visible manifestation of the global economy, the products of a transitory world system that strongly articulated in a 'cross-border network of some 30-40 cities' (Sassen, 1994, p. 131; also see Godfrey and Zhou, 1999; Beaverstock *et al.*, 2000; Smith, 2003). Amsterdam is clearly a city of this type, besides being a key city in the regional, national, and European contexts.

What this means is that social, cultural and environmental development processes and patterns are noticeably shaped by extra-local forces and actors, though the long history of development policies, as well a relatively strong state (at the national and local level) has mediated the 'global'. This said, it is important to recognise that any regionally-specific development agenda must recognise:

- The gateway function of the global city, a temporary and permanent home for a large number of mobile people, both skilled and unskilled; tourists, business people, migrants, and conventioners.
- The cosmopolitan nature of the global city.
- The national and regional (as in European) roles of the global city as an engine of economic and societal change.

- The disproportionate demands placed on society via systems of social support, including education systems, to integrate migrants into society.

Given this global city/gateway city role, Amsterdam's HEIs face relatively unique opportunities and constraints in seeking to enhance their contribution to social, cultural and environmental development at the regional scale. For example, the development of social, cultural and environmental innovations that are associated with HEIs in Amsterdam will not only generate a regional impact, but they will also be of interest to similar types of stakeholders in other global cities. Moreover, Amsterdam's global city status provides Amsterdam-based stakeholders with a platform that makes it relatively easy to profile their successes, and in doing so develop synergistic and supportive relations with stakeholders in other cities around the world. Innovations in, for example, urban environmental sustainability or immigration and integration (two issues Amsterdam has ample experience with) could have resonances far beyond the region, and the nation, thereby enabling Amsterdam to act as a platform for the spread of insights on innovations at a global scale. Amsterdam is not the only city in the Netherlands that has a high proportion of *allochtonen* and Rotterdam has a higher proportion. Amsterdam does however have high global visibility, and there are few signs that stakeholders in Amsterdam (and the Hague) are cognisant of the unexploited opportunities Amsterdam has to become a test-bed for innovation with respect to social, cultural and environmental development.

HEIs in Amsterdam are clearly playing a valuable role in facilitating social, cultural and environmental development in the city-region, as well as the nation. As noted in the self-study report, HEIs:

- Provide services (e.g., health, leisure) to residents;
- Provide the education services (e.g., for teachers) which train up workers for the social services sector;
- Conduct research on social, cultural and environmental issues, and disseminate these findings locally;
- Develop and open up for public access HEI facilities;
- Offer volunteer activities of faculty, staff and especially students.

We saw some excellent examples of which the New Energy Docks (see Box 6.1) is one. Moreover, HEIs also have the capacity to play a

role in integral district development projects, an issue not directly covered in the Amsterdam Self-evaluation Report.

Box 5.1 New Energy Docks

UvA and VU are both supporting New Energy Docks. This organization connects science with other stakeholders in the field of sustainable development such as several large firms in the region (Shell), the *Kenniskring*, the *Amsterdamse Innovatiemotor* and the city community. The aim is to support sustainable development through the exchange of knowledge, support for regional economic development and entrepreneurship. The latter goal is realized by means of an incubator. New Energy Docks is heavily involved in the urban development of the Northern IJ shore. It offers programs to support entrepreneurship in sustainable development in this specific neighbourhood. It also provides knowledge to planning agencies and the social housing associations which are currently undertaking large scale housing renovations in this area. New Energy Docks aims to develop a new building for sustainable development initiatives which must become an icon for sustainability in terms of material use and energy efficiency.

New Energy Docks is a formal organisation with an executive board and a board of overseers. See www.newenergydocks.nl

Source : Amsterdam SER, 2009

Following the review visit, and an analysis of the self-study report, there are a variety of issues worthy of some elaboration. The key message the review team would like to convey is that these successes need to be better coordinated, institutionalised, and profiled, within and beyond the region and at the European and indeed global scales.

5.1 Teaching and Learning

Amsterdam is blessed by the sheer number, quality and diverse types of HEIs located within the city-region. These HEIs are active, dynamic, and clearly striving to improve the nature of their activities with respect to research, teaching and service. On all the bases noted above, Amsterdam's HEIs are contributing to the maintenance of the high quality of life that makes Amsterdam what it is: one of the world's most fascinating and livable global cities.

On the issue of teaching, the UAS, in particular, have attempted to incorporate innovative bridges between the HEI and the community,

broadly defined. Internships, collaborative research projects, and voluntarism are evident (e.g., the City Academy or internships at the Directorate of Justice, municipality of Amsterdam). The review team was particularly impressed with the commitment of HvA and INHolland mission to community-directed teaching and learning.

Nevertheless, two shortcomings merit attention. Firstly, and as noted in Chapter 4 of this report, opportunities for lifelong learning are not as effectively organised as they could be. Thus the positive social impacts of higher education are concentrated on the relatively young, and therefore shielded from other segments of society.

Second, while there are a plethora of initiatives, especially in the UAS to link programmes (and students) to the community via internships, collaborative research projects, and so on, there is no systematic policy, nor strategy, regarding the value of service learning or co-operative education more broadly. Moreover, there appears to be a broadly accepted conceptualisation of higher education such that the mission of local and regional social development, via the education process, is the primary domain of the UAS (as noted in OECD's *Review of Tertiary Education*, 2008) and not that of the research universities.

In contrast, HEIs in an increasing number of OECD countries are systematically working to develop explicit institution-wide strategies for community engagement for the equivalent of *both* WOs and UAS, and use these to complement and support the emerging objective of establishing bridges between HEIs and industry.

This development is occurring most successfully via the mechanism of *co-operative education*. The long history of co-operative education, going back to the early 1900s in the USA, and now a global phenomenon, has been driven by HEIs of all forms and ranks.

Co-operative education is a collective product, enabled as it is by HEIs, industry, government, and the non-profit sector, yet is firmly centred and anchored within the public HEI, which ensures that the educational element of co-operative teaching and learning is guided by core educational principles, with HEIs ultimately responsible for setting the 'rules of the game'. Thus, while it is important to build bridges with industry, HEIs need to create innovations in teaching that ensure that their core educational principles hold firm: co-operative education represents such a stance.

Second, as noted in Box 5.2 below, the institutionalisation process has tended, at this point of history, to be sanctioned at the highest levels within HEIs, which leads to both symbolic and material support. Individual disciplines and fields then work with cooperative education in their own way via the implementation process, but engage with, support, and are supported by, a centralised co-operative education office. This type of governance and support structure reduces the fragmentation that can occur. One cautionary note, however: co-operative education does involve a significant time allocation on behalf of the student, and this might run up against the Bologna-era reforms which are compressing, in most cases, the time to degree in European countries including the Netherlands.

Box 5.2 Co-operative Education

Cooperative Education is a form of education that HEIs typically integrate into their overall education mission on the basis of a philosophical decision, which is then followed by the institutionalisation process, albeit differentially across the disciplines within any one HEI. Canadian universities, including comprehensive universities like the University of Victoria and the University of Waterloo have over four decades of experience with cooperative education, while a national organisation (the Canadian Association for Cooperative Education) was established in 1973 to support the co-op education agenda. As the CACE notes¹:

"Co operative Education Programme" means a programme which alternates periods of academic study with periods of work experience in appropriate fields of business, industry, government, social services and the professions in accordance with the following criteria:

- (i) each work situation is developed and/or approved by the co-operative educational institution as a suitable learning situation;
- (ii) the co-operative student is engaged in productive work rather than merely observing;
- (iii) the co-operative student receives remuneration for the work performed;
- (iv) the co-operative student's progress on the job is monitored by the co-operative educational institution;
- (v) the co-operative student's performance on the job is supervised and evaluated by the student's co-operative employer;
- (vi) the time spent in periods of work experience must be at least thirty per cent of the time spent in academic study.

Less institutionalised, and time-consuming (for students) approaches are possible. “Service learning”, for example, is an approach that provides students with service learning projects, internships, independent study and community-based fieldwork.

While both co-operative education and service learning have long and entangled histories, are rooted in the intellectual contributions of John Dewey (as are related concepts including experiential learning and project based learning), the practical difference is that service learning experiences tend to be incorporated into courses versus functioning as courses themselves (which is more akin to the co-operative education approach). Both approaches, though, recognise that retention and effectiveness with respect to learning and teaching are enhanced via the experiential learning process (see Figure 5.1).

Figure 5.1 . Service learning modes with respect to average learning retention rates



Source: Office of Service-Learning and Community-Based Research, University of Wisconsin-Madison.

As noted above, service learning is clearly occurring within Amsterdam's HEIs, though predominantly via the course offerings of UAS. Here too, service learning could be more broadly incorporated into the educational agenda of Amsterdam's WOs following a period of strategic planning about how best to institutionalize, govern, and assess the service learning experience. Options for institutionalisation include: University-based offices; Faculty/College-based offices and Department-based offices. These options, and many others, are discussed by advocacy organisations that promote service learning, and outlets including the University of Michigan's *Michigan Journal of Community Service Learning*.²

The experiential learning philosophy meshes exceedingly well with the desire to enhance the role of HEIs in regional and city development. Service learning also intersects with intellectual debates in a variety of disciplines (e.g., sociology, engineering) about developments such as "public sociology", knowledge translation, "engineers without borders", and can be used as a vehicle to draw hitherto uninterested disciplines into debates about HEIs and regional development. The experiential learning agenda also has the capacity to support SMEs, especially those in the newly formed and understaffed creative industry firms.

Our final comment relates to the issue of what forms of teaching are not present, or visible and generating impact, in any significant scale. We were not made aware of major programmes on social innovation themes with direct relevance to the social, cultural and environmental sectors which could act as powerful voices in regional innovation and regional development debates. Management schools, and public policy schools, can provide such programmes (see Box 5.3).

Box 5.3 The Center for Social Innovation at Stanford

Stanford University's highly ranked Graduate School of Business hosts a large Center for Social Innovation³ that has the mandate to "build and strengthen the capacity of individuals and organisations to develop innovative solutions to social problems." Stanford (see Phillips, Deiglmeser and Miller, 2008: 39) defines social innovation as:

A novel solution to a social problem that is more effective, efficient, sustainable, or just than existing solutions and for which the value created accrues primarily to society as a whole rather than private individuals.

The presence of such centres of learning in HEIs legitimises and supports teaching programmes, and contributes to regionally-specific socio-cultural and environmental development processes. Social innovation is brought to life via the effort of faculty and students, synergistically working together, testing ideas, developing case studies, capstone projects, and 'interventions' in the real world, including in the local region. They frequently work in association with environmental studies units such as the equivalent to the *Instituut voor Milieuvraagstukken* (Institute for Environmental Studies) at VU, but via teaching programmes and not just research. This is not to say such activities were not evident in Amsterdam, but that teaching and learning related to social innovation was dispersed across the HEI landscape, with little baseline data available on its overall successes, failures, and outcomes. Equally important, the evidence of capacity to systematically and strategically profile teaching innovation was limited.

5.2 Research and Innovation

As the self-study notes, the research conducted by Amsterdam's HEIs plays an important role in the city and regional development process. For example, the innovative research within the two academic hospitals and medical centres generates fundamentally important outcomes that improve the quality of life of people in the Amsterdam city-region. The very strong research capabilities of Amsterdam's HEIs, especially of the WOs, generates a myriad of impacts with respect to social, cultural and environmental dynamics.

Given the nature of Amsterdam as a global city, one with a very high proportion of *allochtonen*, and a bifurcated labour market, it would be expected that Amsterdam's two main research universities would excel at the study of immigration, integration and the metropolis. For example, faculty in the two research universities, particularly those associated with UvA's Institute for Migration and Ethnic Studies (IMES), as well as the Amsterdam institute for Metropolitan and International Development Studies (AMIDSt), are engaged in internationally recognised research about Amsterdam's immigration experience, the uneven development process, and public policy in a number of relevant spheres (e.g., education, housing, employment). This knowledge is published in traditional outlets, but also fed through to research teams in cities undergoing similar transformations, partly via European Commission-funded networks of excellence as well as the international Metropolis project. Similar

advances have been made on a range of social, cultural and environmental topics, such that Amsterdam is benefitting from this very active research agenda.

There are clear signs, however, that the research landscape is changing. First, the “research drift” of the UAS that was identified in the recent *OECD Review of Tertiary Education* (OECD, 2008, p. 21) appears to be continuing apace:

Likewise some in the UAS see the *lectoren* programme not so much as a means of developing teaching-driven research and consultancy functions in the SMEs, so much as the beach-head for a research role paralleling that of the WOs. The research-intensive universities are concerned that the binary system may break down if such changes go ahead. At the same time their own forays into professional and occupationally targeted programmes, to secure the funding generated by student numbers, might be converging with the role of the UAS as popularly understood. These are all signs of impending academic ‘drift’ that, if unchecked, could undermine the rationale for and the structural supports of the binary distinction.

Comments during interviews during the review team’s visit suggest that the faculty in WOs and the lecturers within the UAS are all feeling increased pressure to publish in international refereed publications, and to apply for external funding. Given this, it is clear that discussions should be held about the continued research drift, and the contradictions between the drive for more published research output by staff working for all HEIs, and the desire for regional development. This contradiction is fruitfully explored by Power and Malmberg (2008) in the European, and especially Swedish, context.

Second, it was also evident that new research priorities are being formulated in the context of changing forms of knowledge, emerging patterns in global research practice, the effects of regional and especially global rankings schemes, and declining levels of government support for higher education, including research.

The UvA, for example, is “designating 15 fields in which it wishes to actively foster further development”. As noted in the *Research Priority Areas* document (December 2008), these areas are:

- Global health and development
- Systems Biology
- Brain and cognitive sciences
- Cultural heritage and identity
- Cultural transformations and Globalisation

- Oral inflammation and infection
- Bioengineering
- E-science
- Astroparticle Physics
- Urban studies
- Behavioural economics
- Corporate Governance
- Information Law
- The international Rule of Law
- Private and Public European Law

A quarter of all research conducted at the UvA is organised within these priority areas. Other University research - often extremely valuable in its own right - falls outside this category. In a time when financial resources are limited and more apt to contract than expand, the UvA is taking this approach in order to both safeguard and promote the pursuit of excellent research.

At VU the search for answers to scientific and social questions is no longer confined to single academic disciplines and research is predominantly organised in interdisciplinary research institutes. This is facilitated by the layout of the VU campus and the proximity of the VUmc. More than 75% of VU research is carried out in the following 14 interdisciplinary research institutes:

- AILSB – Amsterdam Institute for laser Sciences and BioPhotonics
- AIMMS – Amsterdam Institute for Molecules, Medicines and Systems
- AZIRE - Amsterdam Zwolle Institute for Research in Education
- CAMErA - Center for Advanced Media Research Amsterdam
- CCA/V-ICI – Cancer Centre Amsterdam/VUmc Institute for Cancer and Immunology
- CLUE – Research Institute for the heritage and history of the Cultural Landscape and Urban Environment
- EMGO – Institute for Health and Care Research
- ICaR-VU – Institute for Cardiovascular Research
- IVM – Institute for Environmental Studies

- MOVE – institute on human movement (in health and disease)
- NCA – Neuroscience Campus Amsterdam
- NI – Network Institute
- Phoolan Devi – Institute on Societal Safety and Criminology
- VISOR – VU institute for the Study of Religion, Culture and Society

The development of strategic research areas is to be expected in HEIs at this point of time. Yet in doing so, it is important to be aware of the impact of the critical mass/foci approach for regional development practices and processes. To take the UvA case as an example, in deliberations as to the composition of the above line-up, what proportion of these priority areas and interdisciplinary research institutes should be focused on locally relevant development issues?

And if a locally relevant development issue is a focus of study, what principles and strategies (e.g., incentives; direct and indirect support) are concurrently put into place to ensure that 'shop floor' focused research findings are in fact translated and then disseminated, and effectively so, to the diversity of local and regional audiences that exist? The impression comes across that the principal target audience is global, and English-speaking. Yet innovative research in some foci topics can engender positive social, cultural and environmental change at the local and regional level if a strategy and appropriate mechanisms are in place.

Third, the role of the Humanities in contributing to positive social, cultural and environmental development, not to mention innovation (broadly defined) in the Amsterdam city-region, appears to have been overlooked. Apart from the role of educating students who move into the cultural (creative) sector, humanities scholars are, or have the capacity to, conduct research on an array of issues that feed into shedding light on the nature of the city-region development process.

In some contexts this occurs via the integration of humanities researchers into inter- and trans-disciplinary initiatives, often preceded by the development of a "value proposition" that Humanities scholars, and senior leadership of HEIs, collaboratively develop (Yasmeen, 2009). The fundamental, and sometimes troubling questions humanities researchers sometimes raise about development visions and assumptions can be worth supporting for the light they might shed.

Drew Gilpin Faust, the president of Harvard University, published a widely read 9 September 2009 article in the *New York Times* about the problems with such a development agenda. In her article ('The University's Crisis of Purpose'), Gilpin Faust argues that:

"Higher education is not about results in the next quarter but about discoveries that may take — and last — decades or even centuries.Universities are meant to be producers not just of knowledge but also of (often inconvenient) doubt. They are creative and unruly places, homes to a polyphony of voices. But at this moment in our history, universities might well ask if they have in fact done enough to raise the deep and unsettling questions necessary to any society."

In the review team's view, the role of humanities scholarship in social, cultural and environmental development should be more thoroughly interrogated and discussed in Amsterdam city-region innovation circles. Humanities faculty and students, via their research and teaching, have a variety of insights that could positively shape the development process. Amsterdam's long history as a milieu for debate, argument, innovation, and creativity is partly due to the fields that make up the Humanities. Stronger engagement with the humanities is therefore possible, with the right incentives and can complement the contribution made by science and technology.

Notes

- 1 See www.cafee.ca/pages/home.php, accessed 5 December 2009.
- 2 See <http://quod.lib.umich.edu/m/njesl/about.html>.
- 3 See <http://csi.gsb.stanford.edu/>.

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Chapter 6: Capacity building for regional co-operation

The Self-evaluation Report (SER) identified four key challenges for regional co-operation in Amsterdam.

- Creating focus and building mass for the many and various initiatives for increasing and improving innovation which have been taken
- Mobilising greater investment in research, development and innovation
- Creating an effective regional learning system to overcome the divisions in the labour market
- Taking an integrated policy approach to the labour market, including not only education, but also housing and transport, to improve competitiveness.¹

The self-evaluation report notes moreover that there are no formal external mechanisms to stimulate regional engagement. There is an issue of academic culture which is not a matter of snobbery but one of incentives. As elsewhere the provision of appropriate rewards and recognition will go a long way towards improving the situation.

That is not to say that there is no activity. Far from it. There is in Amsterdam and in the Netherlands more generally a richness of institutions, bodies and networks. We also saw a range of innovative and effective initiatives designed to stimulate entrepreneurship, facilitate university-industry links, and enable knowledge transfer and exchange. The Amsterdam Innovation Motor (AIM) and Amsterdam Bright City (see Box 6.1) are but two examples. This richness and range is not surprising, nor is the mix of formal and informal mechanisms unusual. However there is a danger of overlap, lack of clarity, and in the worst case inability to make the decisive move. There is no shortage of willingness to collaborate, if anything there may be too much informal networking and not enough grasping of the nettle of implementation.

Box 6.1 *Amsterdamse Innovatiemotor* and Amsterdam Bright City

Amsterdamse Innovatiemotor: The *Amsterdamse Innovatiemotor* (AIM) is an innovation network established by local governments, research universities, Chambers of Commerce and the banking sector. It is an initiative of the Kenniskring Amsterdam. AIM's aim is to maintain and consolidate the leading position of the Amsterdam region in the knowledge economy. AIM stimulates economic activity around an array of selected innovative clusters: creative industry, ICT, life sciences, sustainability, and trade and logistics.

Amsterdam Bright City is another initiative which responds to the development of the Zuidas, a business district in the Southern part of the city, as one of the global gateways to the city. The economic importance of the Zuidas is that it is home to the headquarters of many multinational corporations. Yet it also resides close to the VU, sits on a crossroad of different transport and road infrastructures and is not far from the city centre. The combination of these qualities makes it the center of the developing services economy in the Amsterdam area. Amsterdam Bright City is one of the new initiatives aiming to exploit the potentials of this centre to the full. It is supported by corporations situated at the Zuidas and adjacent areas, the city community and VU and VUmc. It offers a meeting place for entrepreneurs, employees, expats, scientists and students working in this area. It offers courses, debating sessions and other activities in a diverse range of subjects such as innovation, sustainability, economy but also philosophy and culture. Amsterdam Bright City forms a university college and a structure for community building at the same time. See: www.amsterdambrightcity.nl

Source : Amsterdam SER, 2009

6.1 Connecting HEI , international firms and society

Over the course of the review mission, it became clear the *internationalisation strategies* of HEIs in Amsterdam could better complement or intersect with the global production chains of key firms that matter to Amsterdam/the Netherlands/Europe. The production chain is in the process of being globalised, with variable elements (depending on sector and firm) located in different regional geographies.

For example, Philips, ING, Shell and others all have deep relations with select territories (countries, provinces and city-regions) around the world. In that context, HEIs could bridge into and help construct "global pipelines" that help in the production of knowledge (Bathelt, et al., 2004), with the caveat that knowledge creation can also be embedded in "globally

configured” epistemic communities and/or communities of practice that need not necessarily depend upon the formation of a “pipeline” (Moodysson, 2008). In short, internationalization strategies have been created for all of Amsterdam’s HEIs, but it is unclear how far, if at all, these strategies are designed to complement each other and lead to the establishment of joint HEI-firm research projects or joint education programmes in particular countries.

Another way to foster research and development in Amsterdam is to work with HEIs to facilitate the creation of businesses that specialize in innovative knowledge production in key sectors (e.g. ICT). Mechanisms could be developed to identify and work with transnational companies that are known for acquiring such firms, but ideally firms that are guided by the principle that innovation is *place-dependent*. In such a scenario, acquired SMEs are *de jure* integrated into the legal structure of the TNC, but *de facto* retained in the location in which they emerged (i.e. Amsterdam). CISCO Systems, for example, has adopted this acquisition strategy in some sub-sectors. Thus, rather than expending major efforts to court the development of new R&D complexes, Amsterdam and the Netherlands could consider nurturing the growth of its own firms, while simultaneously devising strategies to ensure these firms are supported in the development process, profiled at multiple scales once operating and healthy, and supported during the acquisition and post-acquisition phase. Such a development strategy has the capacity to generate university industry links within Amsterdam and tie the city-region into the wider geographical context within which the controlling firms are embedded.

International NGOs and Unruly Innovation

Amsterdam is a significant base for international NGOs including Greenpeace International, the Alfred Mozer Foundation, the International Congress and Convention Association, Health Action International (HAI). International NGOs are significant producers of knowledge, some of which feed directly and indirectly into the innovation process. NGOs, while not formally conceptualised as part of the triple helix, need to be accounted for the development process, especially in global city-regions. For example, in the late 1980s/early 1990s, the head of media relations for Greenpeace International’s operations in Amsterdam established a spin-off firm (World Television) in 1991 that quickly developed via a base in Bristol, UK, then acquired Reuters Corporate Television in 1998, and now is “one of the world’s leading video communications agencies for companies, governments and international organizations” with offices in London, Stockholm, Zurich, Geneva, Frankfurt and Madrid.²

NGOs have significant potential to produce spin-off firms, cooperate with HEIs, and build bridges between firms, HEIs, and government. They are also key producers of knowledge. Amsterdam's reputation as a cosmopolitan tolerant and diverse city attracts NGOs, yet the visit team was struck by the lack of attention allocated to these stakeholders in the development process. There is a need to develop a broader view of innovation that factors in the activities of NGOs, and to devise mechanisms to enhance linkages between firms, HEIs, government, and NGOs.

6.2 Reinforcing HEI/cluster linkages

A key issue is to what extent the clusters express well articulated aspirations for the Amsterdam region. The challenge for the Amsterdam region is to develop fine-grained cluster strategies reflecting the inherent qualities and values of the region. Further work needs to be done in order to articulate a "common story" which can serve as a platform for the development of cluster strategies.

Amsterdam is famous throughout the world for its liberal mindedness, culture, creativity and diversity. The region has a unique potential for combining this brand with the academic strengths of the region and for creating innovative products and services to nurture the growing demand for greater life quality. By identifying new and innovative growth layers the region will have a first mover advantage in new emerging markets. Clearly, such strategies might build on existing strong points and emerging clusters.

The current focus on the creative industry is an example of a visionary initiative drawing on inherent qualities and values. However, additional efforts should go into developing a coherent strategic approach embracing industrial and educational priorities.

Strategic developments for the Amsterdam region also need to reflect its position in the wider polycentric area of the Randstad. The diversity in the Randstad region should be seen as an asset. This region has seven universities and 18 higher education colleges. Such a major knowledge pool offers significant opportunities for multidisciplinary research activities. This potential seems to be unfulfilled partly due to lack of incentives and as a consequence of counterproductive organisational structures.

Across the board the higher education institutions in Amsterdam could play a more active role in establishing relationships with SMEs and with clusters. The links that exist are fragmented and the education sector is not yet a leading actor in promoting networking and strengthening cluster coherence. Intermediate organisations such as AIM try to aggregate initiatives and combine expertise but in a relatively scattered way. In the

case of life science, the cluster has difficulty achieving critical mass: more needs to be done to attract companies and foreign R&D investment. Life sciences is a very competitive sector, dominated by some very large companies, and other regions in the Netherlands and Europe are pursuing similar strategies. VU MC and AMC have strengths but their dynamic for spin off development is modest and their synergetic impact on the cluster is limited. The sustainability cluster lacks unity and the logistics cluster is still on the drawing board.

There is a more favourable environment for the ICT and creative industries sector. The city has developed in the field of new media and content industries and gaming has become a serious business. Science Park Amsterdam which is not yet completed will certainly give new opportunities for cooperation for UvA faculty of science, knowledge institutes and ICT firms. The cooperative links in these sectors between the different HEIs could nevertheless be enhanced and the strategies harmonised.

The Öresund example (see Box 7.2 below) underlines the importance of building a (flexible) organisational infrastructure with all stakeholders to promote information sharing and knowledge development within the clusters and to orchestrate the participation of HEIs. Amsterdam clusters could benefit from the establishment of a simple framework or umbrella rather than relying on multiple types of coalitions and alliances. In that context HEIs should be a driving force in promoting collaboration within clusters and with outside partners.

Box 6.2 Öresund region universities and their involvement in high-tech clusters

With a total of 20 Universities and 130 000 students, the Öresund region (composed of the Zealand region in Denmark and the Skania region in Sweden) has many strengths in the education and research sector but its more remarkable asset is probably the cooperation links that have been developed over time between the HEIs. This long term informal cooperation was formalised in 1997 with the creation of the Öresund University. This institution has been a leading actor not only in formal scientific research and education (i.e. Öresund science region), but also in the creation of institutions to promote informal networking activity and information sharing for economic activities. Working in collaboration with researchers, business leaders and policy makers throughout the region, the Öresund University has helped in identifying critical driving growth clusters and facilitating the development of networking association in each of these clusters.

Box 6.2 Öresund region universities and their involvement in high-tech clusters (continued)

These organisations a) Medicon Valley Academy (MVA), b) Öresund IT Academy, c) Öresund food network and d) Öresund Environment are already playing an important role in promoting integration across the region and are showing a great deal of promise for the future.

a) MVA initially publicly funded has become a membership based organisation. Universities and public hospitals pay for 55 % of membership fees. A PHD programme involving 12 students is part of the MVA and aims at strengthening cooperation between public institutions and private companies about product development. While catalysed by the Öresund University and significant public sector funding, the organisation has now developed a dynamic of its own

b) IT Öresund is a cooperative organisation for the cross-fertilisation of IT actors and the development of the IT cluster. In co-ordination with MVA, IT Öresund has developed a cross-border, post doctoral programme building links between information technology and biotech

c) Öresund Food Network was founded with the goal of creating synergies between public and private research and among companies to establish the Öresund region as one of the world's most dynamic agro-alimentary regions

d) Öresund Environment is a similar organisation building links in a triple helix mode and working in the field of traffic and Air, optimised environmental system, construction industry and food.

Source: OECD

In this context Kennispoort Amsterdam is a worthwhile and valuable initiative that can be further developed. The portal appears to operate primarily as a dispatching centre for small business demands. Collaborative research opportunities between the research universities and the UAS are not systematically reviewed and common R&D programmes are scarce. The Kennispoort initiative could therefore be expanded so that it not only services the needs of SMEs but becomes a springboard for the establishment of teams from the two university types, exploring areas of joint applied research through concrete projects. Flexible organisations such as the one developed in Baden Württemberg within the framework of the Steinbeis Foundation could be a source of inspiration (see Box 7.3)

Box 6.3 The Steinbeis Foundation in Baden Württemberg (Germany.) Focussing on competitive transfer

'Nothing is more permanent than change ...'. This classical *bon mot* characterises the nature and work of the Steinbeis Foundation for Economic Promotion, which, in its thoughts and actions, has been developed over the years from a 'partner for technology transfer' into a 'full service solver of problems'.

The main aim of the Foundation, which was set up in 1971 and is organised within the private sector, is to bridge the gap between science and the economy. Ferdinand von Steinbeis, was an important promoter of the Württemberg economy in the 19th century and the Foundation bearing his name supports the interests of the economy as a whole, and small to medium-sized companies in particular.

The central office - the Foundation's 'umbrella' - is situated in Stuttgart. The actual transfer work is done in the Steinbeis Transfer Centres. Independent, flexible, decentralised and close to their customers, there are currently nearly 700 such centres working to provide solutions to problems in every sector of technology, the economy and design. Each Steinbeis Transfer Centre specialises on one particular set of topics and works in direct contact with the company commissioning it.

As most regional Steinbeis Transfer Centres are situated close to a university, it is possible to utilise the existing research infrastructure as a source of technology for the economy. The Steinbeis Foundation implements technology projects both for the Government and industry. 21 000 projects totalling EUR 110 million are carried out every year with the help of over 4 000 employees (full time or appointed for special projects), including 870 professors. A steadily increasing sector of the Foundation is technology transfer on an international scale via its network of subsidiaries abroad, joint venture partners and project associates in 47 countries.

The Steinbeis Foundation seeks to offer maximum usefulness and tailor-made solutions to the problems of the companies seeking its assistance, with as little bureaucracy as possible. The Foundation's extensive range of activities includes target-orientated advice on technologies and markets, a wide range of information and further training measures, and above all the implementation and transfer of concrete research and development projects.

Source: Ministry of Economic Affairs of Baden Württemberg

Most broadly, it is the review team's view that given the limited scale of the TTO units, the Amsterdam region is lacking a key power-player, a legitimate stakeholder with a large number of highly qualified, well resourced, and deeply embedded (in the innovation process) voices regarding the shaping of the development process, as well as innovation policies more generally. The plethora of actors present in the Amsterdam innovation system is a positive feature, to be sure. Yet it is noteworthy that

the regional innovation system contains HEIs versus key innovation-driving units *within* HEIs. This is arguably due to the early stage of this development process, and the youthfulness of Amsterdam's TTOs. Yet other global city-regions (e.g., Seattle) with more advanced HE and regional development outcomes are associated with policy debates, at the urban/provincial and indeed national scales that are strongly shaped by TTOs. The seminal Baye-Dohl Act (adopted in 1980), for example, was propelled by the professionals working in TTOs at Stanford University and the University of Wisconsin-Madison.

Some two decades later, Madison's TTO (the Wisconsin Alumni Research Foundation), as well as Stanford's TTO (the Office of Technology Licensing), continue to use their extensive knowledge resources to propel both local and regional development processes and dialogue, while simultaneously engaging in national policy debates. Extensive knowledge that they are both 'heavy-weight players' with national if not global footprints, enhances the pace of the development process, ensures that non-profit institutions (the TTOs as well as the universities they are associated with) push social impact development agendas, and ensure that 'focus and mass' exists within their respective city-regions.

The Kenniskring (Knowledge Circle) Amsterdam is a key mechanism in the future success of Amsterdam. Described in the SER as "a networking organization consisting of representatives from industry, education and science, and local government the Kenniskring Amsterdam (KKA) aims to stimulate knowledge transfer, strengthening and expanding the regional knowledge infrastructure, and stimulating and initiating new ideas and cooperative clusters". The achievements of the Kenniskring during its fifteen years of existence are impressive and significant. It is of vital importance in establishing personal ties across industry, education and government sector. It helps to isolate shared strategic objectives."

The SER also notes that "the follow-up on these issues is subsequently left to the initiative of the members themselves. If coalitions arise from the Kenniskring, they are thus formed in a bottom-up manner". This analysis reflects what the review team saw and heard. As a new decade dawns it is appropriate to review the role and the achievements of the KKA and to consider whether and how its structure and methods need to be strengthened to meet the challenges of the next fifteen years. Hitherto the Kenniskring has adopted a deliberately small scale approach, which has proved to be extremely useful, but its limitations must be recognised, and these should not be used as an excuse by its members for not playing their role to the full. KKA has legitimacy and it has the support of most of the key actors. Its potential to take on the role of giving more strategic advice should be considered.

Notes

- 1 Amsterdam Self-evaluation Report, pp. 130-131.
- 2 See www.world-television.com/company_background%281%29.asp

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Annex 1 – OECD review team

Richard Yelland is Head of the Education Management and Infrastructure Division in the OECD Directorate for Education. This Division is responsible for the work of the Programme on Institutional Management in Higher Education (IMHE) and the Centre for Effective Learning Environments (CELE), formerly known as the Programme on Educational Buildings (PEB). Richard Yelland joined the OECD in 1986 from the Department of Education and Science in the United Kingdom, where he had held a range of posts in educational policy and administration since 1974. He has led IMHE since 1998. Richard Yelland has been responsible for and has contributed to a range of OECD publications on higher education and educational infrastructure. He is frequently invited to address international and national meetings on different aspects of education. He is a member of the Advisory Board of the UNESCO Centre for European Higher Education (CEPES), and of the International Advisory Network for the Leadership Foundation for Higher Education in the United Kingdom. He has contributed as an international expert to the evaluation of educational institutions and programmes in Belgium and France and in 2009 in Iceland. In 2006 he coordinated the review of Varmland (Sweden) in the first round of OECD reviews of higher education in regional development.

Patrick Dubarle, former Principal Administrator at the OECD Public Governance and Territorial Development Directorate (GOV), has coordinated and contributed to a number of OECD territorial reviews at the national and regional level and has recently participated in the regional innovation reviews in Italy and Mexico. In 2004-2007 he represented GOV in the OECD project on supporting the Contribution of Higher Education Institutions to Regional Development and coordinated the review of the Mid-Norwegian region. Patrick Dubarle is a graduate from the French "Ecole des Mines", and holds a Master's degree in Economics from the University of Paris Sorbonne. He joined the OECD in 1978 as Administrator in the Directorate for Science Technology and Industry. He was appointed Secretary of the OECD Working Party on regional development policies in 1992, where he was responsible for country regional policy reviews and

horizontal programmes. He has worked with national governments in many OECD countries and has spoken at several international conferences. He is the author of documents on high technology policies and sectoral questions including space industry, technological change, technology fusion, innovation and higher education in regional development.

Lauritz B. Holm-Nielsen has been the Rector of Aarhus University (AU) since 2005. Additionally he is Chairman of the Nordic University Association, Vice-Chairman of Universities Denmark, Board Member of the European University Association (EUA) and Euroscience. Furthermore Lauritz B. Holm-Nielsen is a member of the National Growth Forum hosted by the Danish Prime Minister and has been a member of the Prime Minister's Africa Commission, Board Member of the Danish National Research Foundation, Rector of the Danish Research Academy, Vice-Chairman of the Danish Research Commission, Chairman of the Danish Natural Science Research Council and the Danish Council for Development Research. Lauritz B. Holm-Nielsen has a degree in Botany from AU (1971) and was Dean of the Faculty of Science at AU (1976-79) before he became professor at P. Universidad Católica, Quito, Ecuador (1979-81). Lauritz B. Holm-Nielsen has spent 18 years working abroad, 12 of these at the World Bank in Washington D.C. (1993-2005) where he formulated strategies for further education, training and research, and managed the planning and implementation of higher education sector investments in a wide range of emerging countries – most recently Columbia, Chile and Mexico. He has also published many papers on higher education, science and technology, innovation and globalisation. His latest publication (2010) concerns the mobility of talent.

Kristopher Olds is Professor of Geography, University of Wisconsin-Madison, USA. His BA (Human Geography, 1986) and MA (Community and Regional Planning, 1988) are from the University of British Columbia in Canada, while his PhD (Human Geography, 1996) is from the University of Bristol in England. He has worked in England, Canada, Singapore (1997-2001), and the United States (2001 to present). He was based at Sciences Po in Paris during his 2007-2008 sabbatical year. Kris Olds' research focuses on the globalization of the services industries (including education, architecture, property), and their relationship to urban and regional development processes. His current research projects focus on the emergence of Singapore as a 'global education hub', and the global geopolitics and geo-economics and higher education and research. Kris teaches interdisciplinary-oriented courses in economic and urban geography, and plays an active role in regional and international initiatives and centres at UW-Madison, including coordination of Madison's engagement with the Worldwide Universities Network (WUN). He is co-editor of the

GlobalHigherEd weblog and author of numerous articles and chapters, as well as several books.

Véronique C.M. Timmerhuis is Secretary-General of the Social and Economic Council (SER), the main advisory body to the Dutch government and the parliament on national and international social and economic policy. She studied Sociology (focusing on social-economic policy and economic sociology) and History (focusing on the history of industrialised societies) at Erasmus University Rotterdam. From 1989 to 1998, she worked as a researcher for IVA, the institute for policy research and advice of Tilburg University, where she gained her PhD with a thesis entitled *Research organisations in the process of change*. In 1998, she joined the Advisory Council for Science and Technology Policy (AWT) as a senior policy officer. In 2001 she was appointed as its Director, which she remained until her appointment as Secretary-General of the Social and Economic Council on 1 February 2007. In addition to her SER position, Véronique Timmerhuis is a member of the Supervisory Board of the Erasmus University Rotterdam and a member of the Advisory board of the Business Administration programme of Radboud University Nijmegen. Currently she is also a member of an Expert Group installed by the European Commission on the 3% R&D objective: progress made and post-2010 policy scenarios.

Annex 2: Programme of the review visit

Monday 8 November

Maagdenhuis, UvA,

- 09.30 – 11.00 Meeting with members of the project group
Members of the project team / authors of the SER:
- Marcel Peek**, Head Research Team at ING/Economics Department
Marijk van der Wende, Professor in Higher Education at VU University
 and Dean of the Amsterdam University College (AUC)
Louise Fresco, Professor at University of Amsterdam
Bert Tieben, SEO
Peter Nijkamp, Regional Co-ordinator
Jan van Mook, INHolland
Gerard van Haarlem, Dean of the School of Technology Hogeschool van
 Amsterdam (HvA)
Robert-Jan Lamers, Head of Tech Transfer Office UvA / AMC
Jurjen van Rees, Tech Transfer Office UvA / AMC
Merlijn Draisma, Policy Advisor to the Executive Board of VU University
 Amsterdam

City Hall

- 13.00 – 14.00 Meeting with members of the Regional Steering Committee
Vice-Mayor Lodewijk Asscher
Paul Doop, Board member at UvA
René Smit, President of VU University
Oswald Schwirtz, Director of the Chamber of Commerce
Petra Hoogerwerf, Dean of the School of Economics of INHolland
 (representing Geert Dales, president)
Marcel Peek, ING, (representing Hans Van der Noordaa, member of the
 Executive Board of ING)

Science Park Amsterdam, Hall

- 14.30 – 14.35 **Paul Doop**, Board Member of University of Amsterdam (UvA) /
 Hogeschool van Amsterdam

Bart Noordam (Dean, Faculty of Sciences UvA),
Jan van Mill (Dean, Faculty of sciences VU University)
Bauke Oudega (Dean Faculty of Earth and Life Sciences VU University)

Amsterdam Medical Business Park Presentation

16.20 – 17.00 Benchmark study Life Sciences sector by:
Maarten van Dongen
Louise Gunning, Board of Amsterdam Medical Centre
Robert-Jan Lamers
Maarten van Dongen, Consultant.

Tuesday 9 November

Almazaa
 08.45 – 10:00 **René Smit**, President of VU University
Wiebe Draaijer, Managing Partner, McKinsey Benelux
Robert Carsouw, Consultant, McKinsey).
VU University
 10.15 – 11.00 **Hans van Berkum**, A-skin, Spin off entrepreneur
 11.00 – 12.00 **Steeff Blok** Director of Technology Transfer Offices VU and UvA
Robert-Jan Lamers: Director of Technology Transfer Offices VU and UvA
 12.00 – 13.00 Lunch with representatives of VU university
 Students of VU University
 Spin-off entrepreneurs,
Jan Siersma, Policy Advisor to the Executive Board on Co-operation in
 the Amsterdam region,
Prof. Rob Leurs, head of VU Drug Discovery Institute,
Arnaud Jullens, Programme Manager at VU Centre for Entrepreneurship
André Krouwel, Assistant Professor at VU University and shareholder of
 Kieskompas (spin off company)
Zuidas ABC
 13.45 – 14.00 **Hans de Sonnaville**, Academic Director of Zuidas Amsterdam Bright City,
 OECD Team A
 14.00 – 15.00 **Douglas Grobbee** (ABN AMRO Bank)
Hans de Sonnaville, Managing and Academic directors of Zuidas ABC
 OECD-Team B
 14.00 – 15.00 **Jeroen van Loon**, Managing Director, Duisenberg School of Finance
 15.00 – 16.00 Zuidas ABC
 16.00 – 17.00 **Jan Breed**, Director of VU Law Academy.

Erik Boer, Managing Director of CASE, Centre for Amsterdam Studies on Entrepreneurship,

Wednesday 10 November

Chamber of Commerce

09.00 – 10.00 **Oswald Schwartz**, President of the Amsterdam Chamber of Commerce
Richard Hoving, Policy Advisor at Chamber of Commerce

OECD Team A

10.00 – 11.00 **Rik Bleeker**, Director of the Kenniskring
 11.00 – 12.00 4 Interview sessions with representatives of international businesses in the Amsterdam Area A
Patrick Rikken, Director Advanced Technologies & Business operations at Cisco

OECD Team B

10.00 – 11.00 **Joke van Antwerpen**, Director of the Amsterdam Innovation Motor,
 11.00 – 12.00 3 -4 Interview sessions with representatives of international businesses in the Amsterdam Area
Edwin Oskam, policy advisor at Economic Department, City of Amsterdam

INHolland

15.00 – 16.00 **Joke Snippe**, Board Member of INHolland
Petra Hoogerwerf, Director of INHolland School of Economics

OECD-team A :

Marij Urlings, Director of INHolland School of Health
Johannes Vugt, Team Manager ROC ASA,
Erik Wittenburg, Course Director School of Health
Sandra Michelsen, Amsterdams Innovative Motor, Cluster life sciences

OECD-team B

15.00 – 16.00 **Mir Wermuth**, Director School of Communication, Media and Music,
Lucas de Bruin, Project manager School of Communication, Media & Music
Martin Bouma, Director Media College Amsterdam, educational partner within intermediate education

OECD-Team A

16.00 – 17.00 **Marij Urlings**, Director of INHolland School of Health together with local business partner

OECD-Team B

Elvire Blegel, Director School of Leisure,
Remko de Jong, entrepreneur creative industries
Erik Hendriks, senior lecturer entrepreneurship INHolland.

Thursday 12 November

- HvA*,
 09.00 – 10.00 Review committee
Gerard van Haarlem, Dean School of Technology
Willem Baumfalk, Dean School Social Work & Law
Hans Kaspersen, ROC van Amsterdam (intermediate vocational education)
- 10.15 – 11.15 Review committee
Gerard van Haarlem, Dean School of technology
Willem Baumfalk, Dean School Social Work & Law
Peter de Bois, Professor MI(d)R School of Technology
Ronald Mooier, business partner HvA (Dilems)
The Hague, Ministry of Education
- 14.00 – 15.30 Meeting with representatives regional and national policies
 OECD-ambassador, representatives Ministry of Economic Affairs & Ministry of education,
 Regional Co-ordinators of Amsterdam & Rotterdam reviews,
 Board Members of HEIs in the Rotterdam and Amsterdam region (i.e. members of RSCs), representatives of national or regional programmes for innovation, such as Pieken in de Delta / Senternovem.
- 17.00 – 19.00 *KNAW, Kloveniersburgwal*
 Diner / reception with representatives of regional business & representatives of the HEIs. Organised in cooperation with Kenniskring (a network of representatives from industry, education, science and local government)

Friday 13 November

- OECD Team A:
VU Medical Centre
 11.00 – 11.30 **Wim Stalman**, Board member of VU Medical Centre and Dean of the VU Faculty of Medicine
- 11.30 – 12.30 *Amsterdam University College*
 OECD Team B
Almere, World Trade Centre
 08.30 – 12.30 Site-visit & interviews
Martine Visser, Alderman of Economic affairs and Education at City of Almere
AUC
- 12.30 **Marijk van der Wende**, Dean of the Amsterdam University College,

Higher Education in Regional and City Development

Amsterdam, The Netherlands

Amsterdam has the characteristics of creativeness, openness and diversity that make it attractive to global talent and young population. It has strong research universities and excellent transport infrastructure including one of the world's leading airports. It is the financial capital of the Netherlands and home to many multi-national companies. Amsterdam's cultural and architectural heritage have ensured that it is better-known globally than many cities twice its size.

However, the Amsterdam metropolitan region still has unfulfilled potential. This report looks at how to encourage effective interaction between the higher education sector and the region, not simply on the transfer of technology and knowledge, but on the mobility and skills of people. It considers how to develop and transform the talents and competences both of the young non-Western minority and of the 30+ age-group.

This publication explores a range of helpful policy measures and institutional reforms to mobilise higher education for the development of Amsterdam. It is part of the series of the OECD reviews of Higher Education in Regional and City Development. These reviews help mobilise higher education institutions for economic, social and cultural development of cities and regions. They analyse how the higher education system impacts upon regional and local development and bring together universities, other higher education institutions and public and private agencies to identify strategic goals and to work towards them.

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